TRY LUMIERE PLATES & PAPERS.

B. J. EDWARDS & CO., THE GROVE, HACKNEY.

EDWARDS' LANTERN PLATES 1/- PER DOZ.

THE OPTICAL
MAGIC LANTERN
JOURNAL
AND
PHOTOGRAPHIC ENLARGER.

A Magazine of Popular Science for the Lecture-room and the Domestic Circle.

Edited by J. HAY TAYLOR.

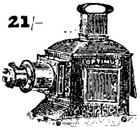
[Entered at Stationers' Hall.]

Vol. 7.—No. 83. APRIL, 1896. Price 1d., Post free 2d.

THE MAGIC LANTERN: ITS CONSTRUCTION & USE. Contains complete Instructions. Cloth Covers, PRICE 6d

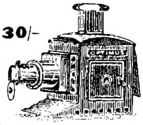
Each Magic Lantern is efficient for exhibitions. The Lens gives crisp definition, being a superior Achromatic Photographic Combination with rack and pinion. It is fitted to a telescopic lengthening tube, so gaining increased focal accommodation. The Condenser is composed of two plano-convex lenses of 4 inches diameter. The refulgent lamp has 3 wicks (or 4 wicks 2s. extra), yielding a brilliantly illuminated picture.—Each is complete in box.

21/-



Japanned Metal Body.

30/-



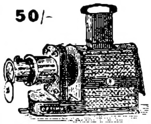
Superior Japanned Metal.

LANTERN PHOTOS.
Plain, 1/- : *Coloured*, 1/6

ALL ACCESSORIES *at* REASONABLE PRICES

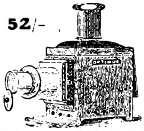
LIMES
In Air-tight Cases.
SOFT .. *Per doz.*, 1/-
HARD .. „ 1/6

50/-



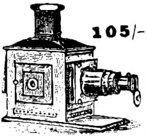
Perforated Russian Iron Body, Brass Sliding Tubes.

52/-



Mahogany outside Body, 2 Panelled Doors, Metal Stages, Sliding Tubes.

105/-



Best Mahogany Body, Brass Stage and 3-draw Telescopic Tubes,

"OPTIMUS" 100 CANDLE-POWER LAMP FOR PROJECTION LANTERN, THREE-WICK 25s.

"OPTIMUS" ETHO-OXYGEN SAFETY SATURATOR. FOR OPTICAL LANTERN ILLUMINATION. With Specially Suited Mixing Chamber Jet, **70s.**

PERKEN, SON & RAYMENT, 99, HATTON GARDEN, & 141, OXFORD ST., **LONDON. 'OPTIMUS.'**

LEONARD CHAPMAN & Co.,
ENGINEERS,
Sheffield Street, London, W.C.
(LINCOLN'S INN.)

Patentees of and Contractors for the erection of Plant for extracting **OXYGEN** from the atmosphere
Makers of Improved High-Pressure **COMPRESSORS** for Oxygen, Hydrogen, Carbonic Acid, Ammonia, &c.

Solid Drawn Seamless Steel **GAS CYLINDERS** of guaranteed Carbon percentage and ductility. All Cylinders tested, stamped, and numbered by GOVERNMENT INSPECTOR, whose CERTIFICATE accompanies each.

Sole Makers of CHAPMAN'S Improved Indestructible VALVES of "Bull Nose" and other patterns.

Telegrams—"SCENES, LONDON."

USE HAUFF'S DEVELOPERS—AMIDOL, METOL, GLYCIN.

SEND FOR *Samples and Prices* OF THE

CRITERION P.O.P.,

AND THE

DRUM BRAND

ALBUMENISED PAPERS.

Best Terms to Exporters.

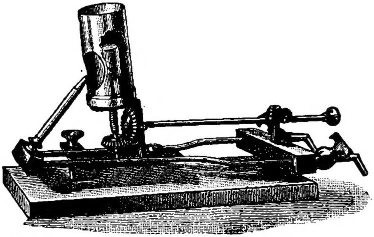
SOLE AGENTS:

W. B. WHITTINGHAM & Co., LTD.,

91, GRACECHURCH ST., LONDON, E.C.

WOOD'S "SPECIAL JET"

Is the Jet for the coming season, absolutely safe, brilliant light, equal to mixed jet and hard lime; gas at ordinary pressure from the main can be used.



Read the following report (Optical Magic Lantern Journal, November, 1894) *on the Candle-power of various Jets, by Mr. W. J. Coles, A.M.I.C.E.*:—

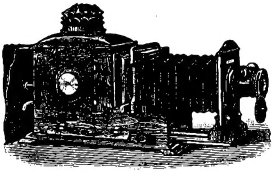
Ordinary blow-through Jet, soft lime ..	260 candle-power.
Wood's special blow-through Jet ..	475 " "
Ordinary mixed Jet, hard lime.. ..	475. " "

Price of Jet, best workmanship and finish, £1 11s. 6d.

Send for Wood's Catalogue of Lanterns and Slides on Sale or Hire, post free, three stamps.

E. G. WOOD, 74, Cheapside, LONDON.

ARCHER'S IMPROVED OPTICAL LANTERNS.



Will show to perfection any distance from the screen.

Two Prize Medals.

Proved superior to all others, See Reports. **"THE IDEAL"** our new PERFECT Single Lantern and Automatic Dissolver.

See Enthusiastic Testimonials from PAUL LANGE, Esq., G. E. THOMPSON, Esq., **Manchester Camera Club**, *and many others.*

"THE IDEAL," the Lantern of the future. Price £8 15s. complete.

No. 3, Plainer Form, £6 6s. complete.

The Improved "PHOTINUS" is the most powerful oil lantern in the world. Price £4 4s.

ARCHER'S NEW OPAQUE SCREENS, just supplied to the Manchester Photo Society, as they proved, THE BEST OF ALL. (See Testimonial.)

ARCHER & SONS. Lantern Specialists and Manufacturers, 43 to 49, Lord Street, Liverpool.

Established 1848. Illustrated Lists free. Effect Slides painted for Wholesale London Houses. All kinds of Slides made to order.

GENERAL WANTS, &c.

First twenty words, 6d.; every three extra words, 1d. Trade Advertisements in this column, 3s. per ½-inch.

A PRACTICAL Lanternist of 20 years' experience is open to engagements, with or without his own apparatus, in town or country, on very moderate terms. Reference, Editor of this Journal.—Address, Optics, 13, York-street, Walworth, London, S.E.

MASON'S S.W. Rectilinear Lenses; quality guaranteed, approval if desired; 5 by 4, 15s.; ½ plate, 21s. Repairs, &c.—R. G. Mason (from J. Swift), 69, Park-road, Clapham, S.W.

GREAT CLEARANCE SALE of New and Second-hand High-class Lanterns, which must be sold.—Walter Tyler's £54 Triple, for £38 10s.; quite new. Wrench's treble rack telescope triple. A fine triple, 4½ in. condensers, used by Wilkie; complete with jet, dissolvers. A magnificent combination oxy-hydrogen microscope by Ladd; cost £100; price £32 10s. A beautifully japanned modern tin triple, two Malden dissolving taps, brass supply pipes, set £9 10s. A ditto bi-unial, all complete, £5 10s. Bargains. Also Grand Effects. Lecturer's candle reading lamp, 3s. 3d.; the "Universal" 4-wick lantern, 4 in. condensers, £1 2s. 6d.; 12 3¼ coloured slides, 1s. 9d. a box; slipping slides, 6d.; 30 sets of life-model subjects, beautifully coloured, 1s. 3d. each; 50 sets of coloured photos; tales, 1s. each. Splendid value; lists free.—W. C. Hughes, Brewster House, Mortimer-road, Kingsland, London, N. It is worth your while to pay a visit to Brewster House, and to see the grand display of high-class optical lanterns, &c., and to get some bargains.

BARGAIN.—Complete Limelight Apparatus, in perfect condition as new; powerful lens; retort; purifier, and quantity chemicals; 25s. the lot.—8, Magdalen-road, Norwich.

WANTED, Coloured Lantern Slide Sets, "Fiords of Norway," "London to the Falls of Niagara."—John Mason, Market Place, Newbury.

SEVEN ¼-plate boxes, 7 ½-plate boxes, changing bag, ½-plate camera-stand, lamps, 2 ¼ plate printing frames, ¼-inch print case, 2 ¼-plate albums, ¼ and ½-plate light-tight bags, 2 ¼-plate developing dishes; ¼-inch hand-camera, dark slide recorders, etc. What offers.—Grangefield, Park-road South, Birkenhead.

"STAR" 6-way Dissolving Tap; practically new; 7s. 6d.—Goad, 60, Tottenham Court-road, W.

CARROLL & SYE,

Manufacturers and Publishers of all kinds of Optical Lantern Slides. To lanternists and slide makers who wish to have their slides coloured in the best transparent and effective manner should send direct to Carroll & Sye. Slides coloured 6s., 12s. and 24s. per doz. Slides made from negatives, prints, drawings, etc., 6s. per doz. Trade supplied. Contracts taken on easy terms.—Address Carroll & Sye, 13, Franklin-place, Whitefield-road, Everton, Liverpool.

END of the Lantern Season.—One hundred Lantern Slides, London Views, for 25s.—John Stabb, 154, Queen's-road, Bayswater.

FOR Sale, One Pair of Grubb's Stereo Lens Aplanatic D, with Norden flap shutter on half-plate front; new; £3.—A. S. Fisk, Rosebank, Woodbridge.

800 SPLENDID Coloured Photographic Slides will be sold at 30s. per 100, in complete Lecture Sets. — St. Clair, 6, Bow-lane, Fishergate-hill, Preston.

COLOURED Slides, 6d. each.—50 Shakespeare's Country, 40 Western Norway, 36 Blackpool, and 40 North Wales.—Clent Cottage, Harborne, Birmingham.

LANTERN Objective.—Taylor, Taylor & Hobson's. Objective, equal to focus 6·3 inches; condition as new; £3.—J. Armistead, chemist, Dalton-in-Furness.

WANTED, Slide No. 6 of Set of Serenader Slides, or can anyone supply information as to what firm makes the set? Postage returned.—W. H. Spite, 10, Market-place, Sleaford.

NEGATIVES.—Fifty-eight ¼-plate Negatives, London Views, suitable for making lantern slides; price 40s.—John Stabb, 154, Queen's-road, Bayswater.

A LANTERN Operator, 20 years' experience, desires engagements for London and suburbs (by appointment to Geologists' Association). Soirée and evening parties attended with microscope and slides.—Address A. C., 40, Gladstone-buildings, E.C.

WANTED, first-class Optical Lantern, 4-inch condensers, 4-wick lamp; maker, full particulars, approval.—G. Reyder, 185, Oldham Road, Mewton Heath, Manchester.

ENLARGING Lantern for Sale; 8½ in. condenser; price 3 guineas; will exchange for sheet safety gauge or useful requisites for lantern.—Apply, Edwards, Photographer, Tamworth.

MAGNIFICENT Coloured Slides.—60 "Round the World," 25s.; 24 "Life of Christ," 10s.; 40 "India," 15s.; 36 "Venice," 15s.; lot of temperance and comic sets.—7, Charles-street, Preston.

FOR Stereoscopic Projection.—24 splendid pairs of Stereoscopic Slides; sample pair and list, 1s. 3d. (post free).—7, Charles-street, Preston.

HUNDREDS OF LETTERS have been received asking for particulars of

* STEDMAN'S *

AUTOMATIC

Oxygen Generator.

(PATENT APPLIED FOR.)

THOSE who have not yet received a pamphlet per post, will please note that this Generator is specially adapted to the wants of Lanternists, as it is simple in construction, and entirely does away with the necessity of carrying explosive and heavy cylinders, or cumbersome gas-bags.

It is absolutely AUTOMATIC, giving the Lanternist enough Gas AT AN UNVARYING pressure for a Lecture of 1½ hours' duration.

It can then be re-charged in a moment, the Light still burning at the Lantern.

PRICE AND FULL PARTICULARS ON APPLICATION.

F. J. STEDMAN, 147, Strand, W.C.

N.B.—Mr. STEDMAN will be pleased to show and explain the working of the Apparatus by appointment.

THE OPTICAL MAGIC LANTERN JOURNAL AND PHOTOGRAPHIC ENLARGER.

EDITED BY J. HAY TAYLOR.

Vol. 7.—No. 83. [Entered at Stationers' Hall] APRIL, 1896. Price 1d., Post-free 2d.

CONTENTS.

	PAGE
Notes..	57
An Appeal	59
Compressed Gas Cylinder Report	59
Oxygen: Its Manufacture, Storage, and Use	62
Polarized Light	63
Stereoscopic Effects on the Lantern Screen	64
Observations Regarding Black Light	65
A Simple Lantern Stand	66
Black Light	66
The Lantern and its Accessories	67
Oil Lamps..	70
Topical Notes	71
New Apparatus	71
Patent Intelligence..	72
Editorial Table	73
Correspondence	73
Notes and Queries	74

Notices.

THE *Optical Magic Lantern Journal and Photographic Enlarger* is issued on the 1st of every month, price One Penny, and may be obtained from all Newsvendors, Railway News Stalls, Photographic Dealers, or from the Publishers, at the following rates, post free:—

		United States.
12 months	2/6	75 cents.
Single copies	2½d.	8 ,,

Advertisements (Scale of Charges), displayed:—

	£	s.	d.
Front and back pages, by arrangement.			
Ordinary page (whole)..	3	0	0
,, ,, (half)	1	15	0
,, ,, (quarter)	1	0	0
,, ,, (eighth)	0	10	0
,, ,, per 1 inch in column..	0	6	0
,, ,, ,, ½ ,, ,,	0	3	0

EXCHANGE Column, General Wants, &c. (not Trade)—First 20 words, 6d.; and for every 3 additional words, 1d.

SMALL ADVERTISEMENTS must reach the office not later than the first post on the 24th of each month. All cheques and postal orders to be made payable to the Magic Lantern Journal Company, Limited.

EDITORIAL communications must be addressed, J. HAY TAYLOR. Advertisements and business communications to the **Magic Lantern Journal Company, Limited, 9, Carthusian Street, London, E.C.**

American Agents:—The International News Co., 38 and 85, Duane Street, New York City.

Important Notice!!!

WE have much pleasure in informing our numerous readers that we have now removed to our new offices at

9, CARTHUSIAN STREET, E.C.
(Close to Aldersgate Street Station).

All **EDITORIAL** communications should be addressed—

J. HAY TAYLOR,
"Optical Magic Lantern Journal,"
9, CARTHUSIAN STREET,
LONDON, E.C.

All **BUSINESS** communications, advertisements, etc., should be addressed—

The Secretary,
Magic Lantern Journal Co., Ltd.,
9, CARTHUSIAN STREET,
LONDON, E.C.

Notes.

THE Aintree Photographic Society has entered upon its third year with a total of nearly sixty members, the report showing steady progress and a substantial balance on the right side. Mr. D. J. Neill, 8, Chelsea Road, Aintree, has been appointed Secretary, vice Mr. C. H. Adkins, who has been elevated to the post of President.

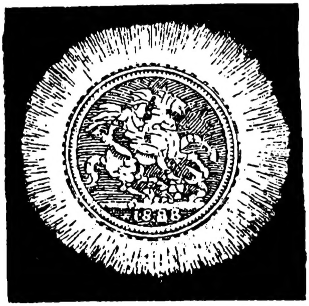
* * *

THE Röntgen rays have been used as evidence in Court. At the Assize Court in Nottingham, Miss Gladys Ffolliott, an actress, claimed damages from the Nottingham Theatre

Company for injuries sustained through a faulty staircase in the defendant's theatre. During the hearing of the case, a London medical practitioner produced negatives of the plaintiff's left foot, taken by Professor Ramsay, by means of the new X rays. The negatives showed that the bone of the foot had been displaced.—Mr. Justice Hawkins remarked that nowadays a man might be sent to an asylum by having his head photographed.—Verdict for the plaintiff, damages £76 10s.

* * *

Mr. J. F. Young, of Llanelly, thus writes to the Editor of the *Western Mail*:—"The enclosed photograph was obtained last Tuesday while making a series of experiments with an influence machine. The arrangements were as follows:—On a flat metal plate I put a photographic sensitive plate, and on this I placed a crown piece, George and Dragon downward. Above this was suspended by silk threads a metal plate, the whole being placed inside a light-tight box, the lower metal plate and the suspended one being attached by two wires to the terminals of the influence machine, which was placed some distance from the box containing the coin, etc. A black cloth was thrown over the box, and the window was darkened, shutting out any possible light, which was only a precaution, for it was eight o'clock in the evening. I then put the influence machine in motion for six minutes, and removed the plate to develop by aid of the ruby light in the usual way. The sensitive plate or coin was not exposed to any light whatever, and all was done, as far as the human eye could detect, in absolute darkness, as indicated by the print, for, if any light existed, the portions of the plate outside the crown would be fogged. This was done without the aid of camera, lens, or any vacuum tube whatever. I have since produced the same effect upon a piece of plain window glass without any preparation whatever, every detail being minutely given. If the above account will be of any use to stimulate other minds to investigate in a similar direction, I shall be glad. Please note that the coin was insulated, and that the effect is due to induction. It is quite possible that the X rays are produced by induction from the inner surface of tube."



* * *

Although it is generally supposed that gas-bags in connection with the lantern are extinct, this is by no means the case. They are still used by some lecturers "doing" the small villages. A Mr. Scott, who was on such occasions in the habit of generating his own oxygen and hydrogen, met with a serious accident lately at Yetholm, N.B., whilst generating hydrogen from acid and zinc. The mixture exploded, and he was injured by reason of one of the pieces of zinc striking him in the eye, besides being badly burned with the acid.

* * *

We regret to have to announce the death of the eldest son of Mr. W. R. Hill, which took place after a prolonged illness on the 6th inst. Messrs. Hill & Sons' high-class work in connection with coloured slides has for many years enjoyed a reputation that may well be envied.

* * *

An acetylene gas generator, at a moderate price, for lantern work is now on the market by Messrs. Thorn & Co., of Camberwell New Road, S.E. As soon as we have tried some experiments with it, we will report to our readers.

* * *

The Hackney Photographic Society held its third annual dinner on the 17th ult., at the "Grasshopper" Tavern, Gracechurch Street, E.C., under the chairmanship of its President, Mr. E. J. Wall, F.R.P.S. About sixty members and friends sat down to partake of the sumptuous fare which had been provided, after which the meeting resolved itself into a smoking concert, and songs, recitations, instrumental music, legerdemain and shadowgraphy, contributed to a most pleasant evening. As was of course to be expected, speeches included, to an extent, subjects pertaining to photography, and even on the menu we had "X rays pudding," so that "photography" was partaken of *via* mouth and ear.

WALTER TYLER, 48, 50 & 94, WATERLOO ROAD, LONDON, S.E.

Magic Lanterns AND Slides.

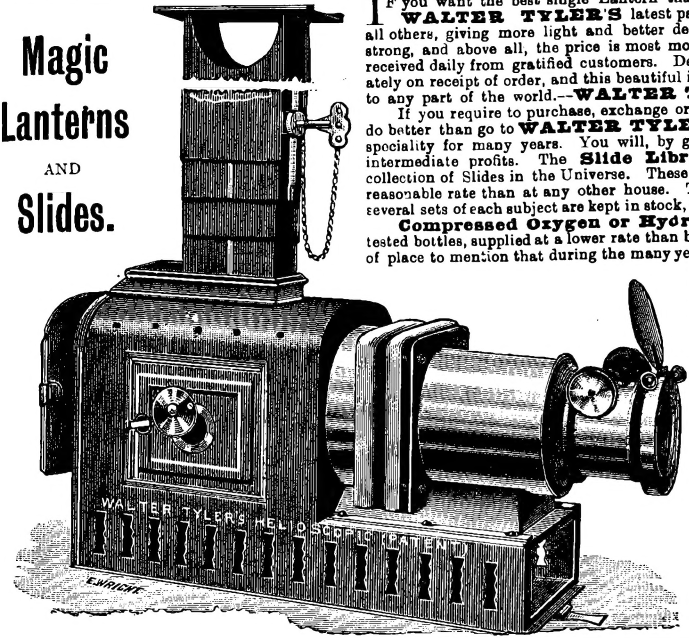
If you want the best single Lantern that the world can produce, send for **WALTER TYLER'S** latest pattern patent Helioscopic. It excels all others, giving more light and better definition. It is extremely portable, strong, and above all, the price is most moderate. Dozens of testimonials are received daily from gratified customers. Delivery can be guaranteed immediately on receipt of order, and this beautiful instrument will be sent on approval to any part of the world.—**WALTER TYLER, Waterloo Road.**

If you require to purchase, exchange or hire Lanterns or Slides you cannot do better than go to **WALTER TYLER**, who has made this business a speciality for many years. You will, by going direct to the maker, save all intermediate profits. The **Slide Library** contains by far the largest collection of Slides in the Universe. These can be obtained on hire at a more reasonable rate than at any other house. The quality is very superior, and as several sets of each subject are kept in stock, there is little fear of disappointment.

Compressed Oxygen or Hydrogen, in thoroughly annealed and tested bottles, supplied at a lower rate than by any other firm. It may not be out of place to mention that during the many years that **WALTER TYLER** has supplied compressed Gas, there has not been in any instance the slightest accident. It is, doubtless, due to the great caution exercised in filling cylinders that are properly annealed and tested.

Having purchased the stock of several well-known manufacturers during the last two years, **WALTER TYLER** is now selling many high-class second-hand Triple Lanterns, Bi-unials and Single Lanterns at much lower rate than the actual cost. Intending customers would do well to inspect his large stock, as many bargains can be secured.

WALTER TYLER'S New Catalogue, upwards of 500 pages (fully illustrated), will be sent post free to any part of the world for 12 stamps; a smaller Catalogue 6 stamps, and Second-hand List post free.



THORNTON-PICKARD TIME AND INSTANTANEOUS **SHUTTER**

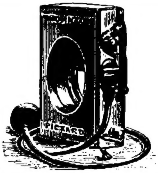
CAMERA "RUBY" PATTERN.
Shutter is attached to Front and folds up with the Camera. Price, including Shutter, Automatic Stand, and Three Patent Plate Holders, from £8 11s.
Catalogue Post Free.

THE THORNTON-PICKARD MANUFACTURING CO.,
ALTRINCHAM, NEAR MANCHESTER.

Snap Shot from 10/-
Focal Plane from 35/-

Price from 18/6 Speed Indicator (recommended) 3/6 extra.

Is both Theoretically and Practically the most efficient in the market. It gives exposures of any duration, from fractions of a second up to minutes or hours, without vibration. The same Shutter will fit two or more Lenses.



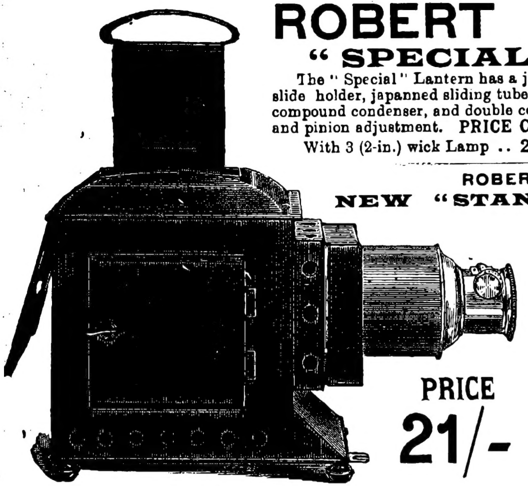
FOR REGISTRATION OF

PATENTS, TRADE MARKS AND DESIGNS,

Apply to—The Patent Department,

"MAGIC LANTERN JOURNAL," 9, CARTHUSIAN STREET, E.C.

Information and advice gratis. Lantern matters a speciality.



ROBERT H. CLARK'S

"SPECIAL" LANTERN.

The "Special" Lantern has a japanned body with dome shape top, spring slide holder, japanned sliding tubes with brass O.G. It has a 4-in. plano-convex compound condenser, and double combination achromatic front lens, with rack and pinion adjustment. **PRICE Complete in Travelling Case—**

With 3 (2-in.) wick Lamp .. 21/- | With 4 (2-in.) wick Lamp 22/6

ROBERT H. CLARK'S

NEW "STANDARD" LANTERN.

Complete in Travelling Case—

With 3 (2-in.) wick Lamp 24/-
" 4 (2-in.) wick Lamp 26/-

PRICE 21/-

TESTIMONIAL.

85, Hartland Road, West Ham, Essex,
October 25th, 1893.

DEAR Mr. CLARK,—Am glad to inform you that the "Standard" Lantern sent me gave every satisfaction, both as to brilliancy of picture and crisp definition, at our lecture last Thursday evening to an audience of close upon 500. I cannot too highly extol the make and finish of goods sent from your establishment.

Faithfully yours,
JAMES A. SPARKES.

ROBERT H. CLARK'S

NEW RUSSIAN IRON LANTERN

As supplied to the "Silver Star" Society.
(Earl Compton, President.)

Price 70s. For full description see Catalogue.

The following important Testimonial has been received from the Hon. Sec. to the "Silver Star" Society:—

"MY DEAR SIR,—After having used your Lanterns at over 300 lectures in all parts of London and the Suburbs, and various country towns and villages, it gives me much pleasure to say, that they have given us the greatest possible satisfaction. Yours faithfully, WALTER S. ROBBINS."

CHROMO-LITHO. SLIDES.

Splendidly Coloured.

Each Set contains 12 Slides (3¼ by 3¼) and is packed in neat box. Price 4/- per set. 3 sets for **11/9**. 6 sets for **23**/-. 12 sets for **45**/-.

- Life of Christ, 2 Sets
- Parable of the Prodigal Son
- The Pilgrim's Progress
- The Calculating Cobbler
- Overland Route to India, 2 Sets
- The Emigrant's Voyage
- The Arctic Expedition
- Continental Views
- Views of London, 2 Sets
- Natural History, 2 Sets
- Natural Phenomena, 2 Sets
- Fun a Edition of the Poets
- Red Riding Hood
- Elephant's Revenge
- Tiger and Tub
- Swiss Family Robinson
- Reuben Davidger
- Mischievous Tommy
- History of a Chicken
- Comic Characters
- Paul and Virginia
- Pictures from the Old Testament
- Blue Beard
- The Slaves of Drink
- John Gilpin
- Dick Whittington
- Mother Hubbard
- Pomney's Joys and Sorrows
- Jackdaw of Rheims
- Robinson Crusoe, 2 Sets
- Jack and the Beanstalk
- Aladdin or the Wonderful Lamp, 2 Sets
- Sinbad the Sailor
- Cinderella, 2 Sets
- Jack the Giant Killer
- Gulliver's Travels
- Life of Joseph
- Views of Palestine
- Nellie's Prayer
- Cash Three (Temperance)
- Reynard the Fox
- The Arctic Circle
- Western Pioneers and Indian Warfare
- Life in Africa
- Santa Claus
- Marley's Ghost
- Bingen on the Rhine
- Precocious Piggies
- The Pilot's Story
- Jacky Marlingspike
- The Educated Cats
- House that Jack Built
- Ali Baba
- Punch and Judy
- Poor Jeremi
- Curfew must not ring to night
- Bob the Fireman
- Dogs and Monks of St. Bernard
- Life in the Arctic Region
- Canadian Life
- Old London and Our Ancestors
- Life on Board an Ocean Palace
- Life in the Soudan
- Celebrated Places of the World
- Pictures from the New Testament
- Romeo and Juliet
- Life with the Colours
- Victoria Cross Heroes
- Jane Conquest
- Lifeboat Heroes
- Utopia
- Pussy's Road to Ruin
- On the Brink: A Tale of Monte Carlo
- Chinese Life
- Scenes from Pickwick, &c.
- Puss in Boots
- The Dwarf Longnose
- The Caliph Stalk
- Little Muck: or The Wonderful Shoes
- The Phantom Ship
- Effect Slides, 3 Sets
- Settler's Life amongst Indians
- Adventures with Wild Beasts
- Discovery of America by Columbus
- How Sissie saved Her Father (Temperance)
- The Village Blacksmith
- Beauty and the Beast
- Children in the Wood

New Sets:—The Miracles of Christ. The Life of David. Views on the Nile. St. George and the Dragon.

A copy of the reading free with each set of Slides. Lecture Books containing readings for the Chromo-Litho. Slides 1/-. Post Free **1/2.**

Special Sets of 12 Chromo-Litho. Slides, Celebrated American Views, etc., price 3/- per set, or 4 sets 11s.; Miscellaneous Subjects, price 2/6 per set, or four sets for 9/6; New Sets of 48 Slides, illustrating the Life of Frederick the Great and the Emperor William I., price 11/- per set, or the two sets 20/-; Full size Changing Comic Slipping Slides in mahogany frames, 6/6 per dozen; Lever Action Slides from 2/- each; Rackwork (including Chromatropes) 2/6 each; Best quality Double Motion Interchangeable Chromatropes, price 4/3; extra Discs from 6d. pair.

A SPLENDID COLLECTION OF PHOTOGRAPHIC SLIDES. Plain, 6d. Hand-painted, 1s.
This series includes—Bible Pictures, Temperance Stories, Humorous Sets, Scenery, Portraits, Statuary, Hymns, &c.

THE LARGEST VARIETY OF CHURCH SERVICE SLIDES IN THE COUNTRY.

The New Antwerp Exhibition Set on Sale or Hire.

The New "Lightning" Double Carrier Frames, best quality, 1s. 3d. Second quality, 1s. Post Free 3d. extra.

Lecturer's Reading Lamp with Flash Shutter, showing Red Light Signal, price 2s. 6d. Carriage paid.

SMALL MAGIC LANTERNS to burn Mineral (Paraffin) Oil, from 1s. SLIDES from 5d. per doz.

New and Enlarged Catalogue, with many reductions in price, gratis and post free, on application to

ROBERT H. CLARK, Wholesale Optician, Royston, HERTS.

An Appeal.

For over thirty years Mr. William H. Harrison has been engaged in matters connected with photographic progress, and he has, beyond doubt, materially contributed to that progress. He has been a regular contributor of useful articles to photographic journals, especially the *British Journal of Photography*, and latterly *Photography*. For some time he was Editor of the *Photographic News*. His nature and manner being singularly unobtrusive, his works were frequently known where his name was unknown.

Among the special subjects investigated and written about by Mr. Harrison have been the following:—The methods of preserving wet plates in working order for considerable periods; devices for rendering tourist cameras lighter without loss of efficiency. He was the first to make a gelatine emulsion and to develop it with alkaline pyro; but pressure of other work prevented him from following up his remarkable discovery. (See Mr. Bolas' lecture, the Photographic Society, 1892.) Briefly, during thirty years, Mr. Harrison has steadily worked on photographic matters, has materially assisted in progress, and has never tried to make pecuniary gain out of his work. He is now, through no fault of his own, stricken down with brain paralysis, and scientific writing has not enabled him to lay up for old age or illness. We therefore, with much confidence, appeal to the photographic world to assist in this most deserving case. Contributions will be gladly received and acknowledged by F. H. Varley, 82, Newington Green Road, London, N.

Andrew Pringle.
Frederick H. Varley.

—:o:—

Compressed Gas Cylinder Report.

On May 21st, 1895, the Secretary of State (after the Fenchurch Street explosion) appointed a Committee to investigate and obtain scientific advice in connection with the risks attendant on the use and conveyance of cylinders of compressed gas. The chief points on which information was desired were:—

1. What are the probable causes of the explosions of gas cylinders?
2. What precautions should be observed in regard to—
   (*a*) Manufacture of gases?
   (*b*) Quality or nature of metal of cylinders and testing the same; and shape, manufacture, and arrangement of fittings?
   (c) Filling cylinders?
3. Is the number of accidents which have occurred so great or the risks of filling and using the cylinders so great as to render desirable any interference, inspection, or control of the manufacture of the cylinders, the filling of them, or the manufacture of the gases?
4. And, generally, any points which in the judgment of the Committee call for attention or regulation, whether relating to oxygen or other gases?

Since the above was issued, the Committee have been investigating the subject, and with this object in view, have visited and questioned makers of cylinders and fittings, compressors of gas and other scientists.

It appears that there have been four cases of explosions which have been attributed to carelessness, one from mixed gas or vapour, due to improper compressing arrangements, four due to bad cylinders, three to bad cylinders or to excessive pressure due to overcharging, one due to ignition from oil, one for which no cause can be assigned, and five explosions of pressure gauges or reducing valves attached to cylinders. These nineteen cases, which have been ascertained, are collated from various parts of the world. With regard to the causes of explosion, the Committee, after going freely into the matter, offer the following recommendations:—

I.—CYLINDERS OF COMPRESSED GAS (OXYGEN, HYDROGEN, OR COAL GAS.)

(*a*.) *Lap welded wrought iron.*—Greatest working pressure, 120 atmospheres, or 1,000 lbs. per square inch.

Stress due to working pressure not to exceed 6½ tons per square inch.

Proof pressure in hydraulic test, after annealing, 224 atmospheres, or 3,360 lbs. per square inch.

Permanent stretch in hydraulic test not to exceed 10 per cent. of the elastic stretch.

One cylinder in 50 to be subjected to a statical bending test, and to stand crushing nearly flat between two rounded knife edges without cracking.

(*b*.) *Lap-welded or Seamless Steel.*—Greatest working pressure, 120 atmospheres, or 1,800 lbs. per square inch.

Stress due to working pressure not to exceed 7½ tons per square inch in lap-welded, or 8 tons per square inch in seamless cylinders.

Carbon in steel not to exceed 0·25 per cent., or iron to be less than 99 per cent.

Tenacity of steel not to be less than 26 or more than 33 tons per square inch. Ultimate elongation not less than 1·2 inches in 8 inches. Test bar to be cut from finished annealed cylinder.

Proof pressure in hydraulic test, after annealing, 224 atmospheres, or 3,360 lbs. per square inch.

Permanent stretch shown by water jacket not to exceed 10 per cent. of elastic stretch.

One cylinder in fifty to be subjected to a statical bending test, and to stand crushing nearly flat between rounded knife edges without cracking.

Regulations applicable to all Cylinders.

Cylinders to be marked with a rotation number, a manufacturer's or owner's mark, an annealing mark with date, a test mark with date. The marks to be permanent and easily visible.

Testing to be repeated at least every two years, and annealing at least every four years.

A record to be kept of all tests.

Cylinders which fail in testing to be destroyed or rendered useless.

Hydrogen and coal-gas cylinders to have left-handed threads for attaching connections, and to be painted red.

The compressing apparatus to have two pressure gauges and an automatic arrangement for preventing overcharging. The compressing apparatus for oxygen to be wholly distinct and unconnected with the compressing apparatus for hydrogen and coal gas.

Cylinders not to be refilled till they have been emptied.

If cylinders are sent out unpacked, the valve fittings should be protected by a steel cap.

A minimum weight to be fixed for each size of cylinder in accordance with its required thickness. Cylinders of less weight to be rejected.

II.—CYLINDERS FOR CARBONIC ACID.

Greatest working pressure to be reckoned as 120 atmospheres.

Cylinders to be of lap-welded wrought iron, lap-welded steel, or seamless steel. Stresses, tests, and conditions as to repetition of tests to be the same as for oxygen cylinders.

The marking to be the same with the addition of the weight of the cylinder empty, and the greatest permissible weight of carbonic acid it may contain.

No cylinder to contain more than $\frac{3}{4}$ lb. of carbonic acid per pound of water capacity, if for this country, or $\frac{2}{3}$ lb. per pound of water capacity, if for the tropics.

If cylinders are sent out unpacked, the valve fittings should be protected by a steel cap.

A notice should be affixed to the cylinder that it contains carbonic acid, and that it should be kept cool and not exposed to the sun or the heat of a stove.

III.—CYLINDERS FOR AMMONIA.

Greatest working pressure to be reckoned as 1,000 lbs. per square inch.

Hydraulic test pressure 1,500 lbs. per square inch.

Greatest working stress 7 tons per square inch for steel, and 6 tons per square inch for wrought iron.

In other respects the material, tests, and rule for repetition of tests to be the same as for oxygen cylinders.

The marking to be similar to that for oxygen cylinders, but the weight of cylinder empty and the greatest permissible weight of ammonia it may contain to be added.

Ammonia cylinders should not contain more than 0·5 lb. per pound of water capacity.

If cylinders are sent out unpacked the valve fittings should be protected by a steel cap.

A notice should be affixed to the cylinder that it contains ammonia, and that it should be kept cool and not exposed to the sun or the heat of a stove.

IV.—Cylinder Fittings.

No oil or similar lubricant to be used for cylinder valves, pressure gauges, regulators, or other fittings.

Pressure gauges to have a check to prevent a sudden inrush of gas.

Pressure gauges for hydrogen and coal gas to have left-handed screws, and to be painted red.

V.—Railway Regulations.

Subject to a reasonable guarantee being obtained that the conditions stated above were complied with, the Committee would be prepared to recommend that cylinders should be distributed by road or rail unpacked.

General Suggestions as to Inspection of Factories for Compressing Gases.

It will be seen from the foregoing statements that the manufacture of compressed and liquefied gases is carried on on a large scale and by many different manufacturers in different places. So far as can be judged, the manufacture is likely to increase still more, and the compressed gases are tending to become indispensable

PREMIER DRY PLATE COMPANY.

ENGLAND'S PREMIER
RAPID CHLORIDE
LANTERN PLATES

The only Plates of the kind Manufactured.

Made from a special formula. They have the largest sale, and are without exception the finest lantern plates ever produced. They give the same clearness and beauty as collodion. The speed is about the same as wet plates.

PRICE 1/- PER DOZ.

To be obtained of all Dealers.

21--24, CHARLES ST., ROYAL CRESCENT,
NOTTING HILL, W.

G. W. WILSON & Co., Ltd.

2, St. Swithin Street, Aberdeen.

Makers of the Highest Class of Lantern Slides.

LIST OF NEW SETS SENT, POST FREE ON DEMAND.

ACETYLENE.

THE "INCANTO" ACETYLENE GAS GENERATORS.—Price £1 5s. For Lantern and Enlarging Purposes. May be seen and tried at the Sole Manufacturers—

THORN & CO.,
169, CAMBERWELL NEW ROAD, S.E.
PARTICULARS ON APPLICATION.

BOUND VOLUMES
OF THE
Optical Magic Lantern Journal FOR 1895
ARE NOW READY.
PRICE 3s. Postage, 4½d. extra.

BRIN'S OXYGEN.

For Limelight, Medical, Metallurgical, and other purposes.

OXYGEN of Guaranteed Purity supplied in Cylinders of the Best BRITISH Manufacture, and complying with all the established Trade and Railway Regulations.

The public are respectfully informed that all Cylinders which are filled by the BRIN COMPANIES (whether their own or their Customers) are labelled with the Companies' Trade Mark. This label guarantees the purity of the Gas, and is a further guarantee that the Cylinder has been tested and proved sound in every respect by the BRIN COMPANY which has filled it. Customers who wish to procure BRIN'S OXYGEN are requested to see that the Cylinders supplied to them bear this label, which is also stamped with the date on which the Cylinder was filled.

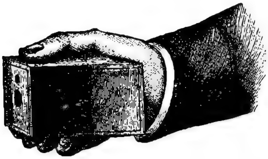
The Works of the BRIN COMPANIES are open during business hours to the inspection of their Customers, who are at liberty to test the quality of Gas being manufactured, and to watch their own Cylinders being tested and filled.

Registered Trade Mark.

Price Lists of Gases, Cylinders, and all Accessories, can be obtained from the Company's accredited Agents, or will be sent Post free on application

Addresses—
BRIN'S OXYGEN COMPANY, Limited, 34, Victoria Street, WESTMINSTER, S.W.
Works—69, Horseferry Road, WESTMINSTER, S.W.
MANCHESTER OXYGEN COMPANY, Limited, Great Marlborough Street, MANCHESTER.
BIRMINGHAM OXYGEN COMPANY, Limited, Saltley Works, BIRMINGHAM.

As a rule, Cameras have either to be slung over the shoulder, or carried in the hand.



THE—

POCKET KODAK—

Slips into the Pocket,

and is hardly felt as it weighs only 5½ ounces.

The **POCKET KODAK** holds 12 exposures of Film at one time, and is unloaded and reloaded in daylight.

It has a large finder, and a red window at the back which shows just how far to turn the key, and how many exposures have been made.

It contains the simplest shutter ever constructed; one button sets and releases it, and makes either instantaneous or time exposures.

It is covered with either red or black leather. Perfect in workmanship. Rich and dainty in finish.

Pictures made with the **POCKET KODAK** are so sharp and distinct that they are capable of being enlarged up to 8½ × 6½ inches, and sometimes larger.

EASTMAN Photographic Materials Co. Limited,

115-117 Oxford Street, London, W.

PARIS: 4 Place Vendôme.

auxiliaries in various important industries. The cylinders containing the compressed gases are distributed widely in streets and on railways, and come into the hands of a very large number of users. The conditions necessary to ensure safety vary in different cases; they cannot be summed up in any very brief and explicit directions and the observance of the necessary precautions requires persistent attention and care. The trade has been carried on hitherto with few accidents, but this has involved a considerable tax voluntarily submitted to by the manufacturers in their own interest, as well as in the interest of public safety. There is, in the opinion of the Committee, a possibility that, in the course of time, with increase of competition in the trade, the care and attention on which safety has depended may be sensibly relaxed.

The risks of explosion of cylinders of compressed gas fall into two classes, viz.:—

1. Risks due to negligence in the manufacture, annealing, and testing of the cylinders.
2. Risks due to the neglect of precautions in filling the cylinders.

Looking to the magnitude of the trade, the risk to the public and to users of the gases, and the partial and imperfect regulation attempted by the action of the railway companies, the Committee think that some control of the trade by official inspection is required. Consistently with the primary requirement of ensuring that the manufacture is carried on with satisfactory appliances and proper attention to necessary precautions, the control enforced should be such as would obstruct the trade as little as possible, and diminish as little as may be the responsibility of the manufacturers. The Committee have reason to think that the larger manufacturers would welcome a certain amount of official inspection and control, partly because it would protect them from unscrupulous competition, partly because it would tend to render unnecessary the enforcement of various restrictions by railways and local bodies which they think prejudicial.

It has been suggested that it would be desirable and sufficient if an inspector were appointed who should superintend the testing of all cylinders used, and place on them an official mark. There is this official testing and marking in Germany, but there is, in addition, an official code of regulations as to filling and other matters. It is not clear what measures are taken to secure the observance of the general regulations beyond the hydraulic testing of the cylinders. The Committee consider it would do more harm than good to depend on official hydraulic testing and marking the cylinders to the neglect of measures which would practically secure the enforcement of other, and, on the whole, more important conditions of safety.

An hydraulic test, even if conjoined with a stretch test, is quite insufficient to determine whether a cylinder is safe. The mere hydraulic testing and marking of cylinders by an official inspector would be very inadequate as a precaution, would tend to give a false impression of security, and would remove from manufacturers their proper responsibility. Such a testing and marking also touch only one class of risk, while, as to the other class, no safeguard is provided.

The Committee think that there should be a general inspection of all factories manufacturing compressed or liquefied gases, under the direction of the Factory Department of the Home Office, or, possibly, a Department of the Board of Trade. Such an inspection should be directed to all matters referred to in this report as important in securing safety. The inspector should act on a scheme of instructions, which could be modified from time to time as experience showed that modification was permissible or necessary. The inspector should have the right to examine the specifications to which cylinders were manufactured, to inquire into the precautions taken to secure proper thickness and complete annealing, to examine the records of tests, and, occasionally to order tests of cylinders for his own information. He should, acting in accordance with instructions, order the re-annealing or re-testing of cylinders. He should have the right to test the pressure gauges, weighing apparatus, and other appliances, and to require alterations to be made if they were unsatisfactory. He should occasionally examine cylinders to see that they were not overfilled.

When an inspector was satisfied that the arrangements at any factory were adequate and that the precautions laid down were being taken, he should report to that effect, and a certificate should be issued stating that the factory had been inspected, and that the arrangements had been found satisfactory.

Factories holding such a certificate should be authorised to test and mark cylinders, and to place on them a special form of test mark.

The Committee think that a first thorough inspection, and an occasional inspection subsequently, at intervals of about six months, would be sufficient as a ground for granting and renewing certificates.

The certificate would be withheld from factories where the arrangements were unsatisfactory, or withdrawn on the report of the inspector that instructions were not carried out.

The Committee see no reason why in addition a special certificate for testing and marking cylinders only should not be granted to certain firms, who would be willing to undertake work of that kind, and who had no direct interest in the manufacture of cylinders. Such firms should themselves inspect the annealing of the cylinders and superintend the testing of them. They should satisfy the inspector that their appliances were adequate, and that they took all necessary precautions, and their records of test should be transmitted to the inspector. Such firms might be remunerated by a fee for testing paid by the manufacturers.

The inspector should have the right to be present at any tests, to order re-testing if he thought it desirable, and to withdraw the certificate if the testing was not carried on to his satisfaction.

The Committee think that the railway companies might, without risk, withdraw the regulation as to packing cylinders, in the case of firms holding a certificate of inspection.

——:o:——

Oxygen, Its Manufacture, Storage, and Use.—II.

By Edmund H. Wilkie

(Of the Late Royal Polytechnic Institution).

The body of Mr. Malden's retort, which was illustrated in last article, consists of an ordinary iron saucepan (H), on to which is fitted the lid of a digester (G), into the centre of which a large diameter brass tube is screwed. Brass tube is used, as it can be obtained in a much lighter form than iron, besides being neater in appearance. The top of this tube reaches to about the dotted line (B), and the major portion of its length is covered by an outer jacket containing water; the object of this being to keep the short length of rubber tube (B), which joins the cap to the retort, from becoming too heated.

When the gas making operation is carried on for any length of time, as would be the case were a large quantity of oxygen being made, the water becomes hot, and to meet this difficulty the small cock (D) was added to allow the water to be drawn off, while a fresh supply of cold liquid is poured in through the perforated shelf shown at (I).

The cast iron lid has a groove turned on its lower surface exactly fitting a certain size saucepan, which can always be obtained commercially, and after filling the groove with luting the lid is placed into position, and firmly screwed down by means of the thumb-screws (E) passing through the clamp (F).

The advantages of such a retort are too obvious to need much description; but I may point out that its chief claims rest upon its safety and economy. It will be apparent that if the pressure should become at all unmanageable, the cap would jump off, and the gas find a free vent through the large tube into the open air, so that the most inexperienced gas maker could, with care, work this retort with the least possible amount of anxiety. A skilful man, if put to the pinch, could make oxygen in almost anything, and the writer has seen the ordinary cast iron tea-kettle used for the purpose.

While upon the subject of generating the gas, we must not forget that it is not absolutely necessary to manufacture our oxygen before the time of exhibition, and that many inventions have been brought forward from time to time for the purpose of generating continuous small streams of oxygen gas for immediate consumption. Experiments were made in this direction quite in the early days of the limelight; but of the majority of them I am only able to say that they were experiments in the right direction. The first really practical invention of which the writer has any personal knowledge is that of Mr. W. I. Chadwick, of Manchester, a gentleman

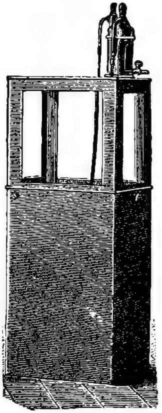


Fig. IV.

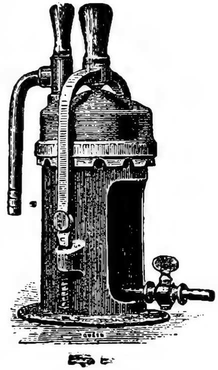


Fig. V.

SOPER & STEDMAN,

Lantern Slide Manufacturers & Colourists,

147, STRAND, LONDON, W.C.

First-class Work. Brilliancy in Tone. Cheap Prices.

PRICE LIST ON APPLICATION.

See also Advertisement at foot of this page of our Slides illustrating

Messrs. NETTLESHIP & ROSE'S **LECTURE,**

From Photographs taken by SPECIAL PERMISSION of the Home Office. *"Our Prisons and their Inmates."*

C. W. LOCKE,

(13 Years Lanternist to B. J. MALDEN, Esq.)

INVENTOR, PATENTEE, and MANUFACTURER of IMPROVED ELECTRIC, LIMELIGHT, and all Kinds of High-Class Optical Lanterns, Lenses, Slides and all Accessories connected with Lantern Exhibitions. Wholesale, Retail and for Export.

DEALER IN PHOTOGRAPHIC CAMERAS, LENSES AND SUNDRIES.

LANTERNS properly Corrected for Registration of Dioramic Effects. The System used by C. W. LOCKE *for Twenty-one Years is the only Correct one, and gives the best Results.*

Practical Lessons in the Manipulation of Lanterns and the Preparation of Photographic Transparencies as Slides and the Colouring of same on Reasonable Terms. Slides made for Lecturers from drawings, engravings, photographs, and all sources, by means of complete and perfect Apparatus recently set up.

C. W. LOCKE personally attends to operate for Public Lecturers and can Supply all Apparatus necessary or will Operate the Lecturer's Own.

C. W. LOCKE'S long public experience (nearly a quarter of a century), during which time he has given upwards of 3,000 exhibitions, will be a sufficient guarantee of success. C. W. LOCKE has operated four times at the Royal Albert Hall, South Kensington, before the DUKE and DUCHESS OF TECK, THE MARQUIS OF LORNE, LADY HENRY SOMERSET, and many of the Nobility; also at most of the Largest Halls in London and the Provinces.

LIMELIGHT for Tableau Vivants, Theatricals, Garden Parties, Balls, &c., &c. LOCKE'S New Patent Mixed Jet and Jet Slides are Now Ready. The Jet is a Marvel of Power, and was used by me at the Royal Albert Hall with great success, giving a 35ft. disc on a 37ft. 6in. screen (the largest ever hung there), at a distance of 166ft. from the screen, the full available distance.

LANTERN PARTS for Amateurs a Speciality. Practical advice freely given. High-Class Single Mahogany Oil Lantern, thoroughly well made, with four-wick Lamp, from £3; with Stocks' Patent Lamp, from £3 12s. 6d. Good useful standard-size metal Lanterns, with three-wick Lamp, from 21/-.

LOCKE for Limelight, LOCKE for Lantern Limes, LOCKE for Lanterns, LOCKE for Lantern Lenses.

Bona-fide Customers may see their Instruments in course of construction from the Raw Material.

Hours, 9 till 5; Saturdays, 9 till 1.

Office and Works, 244, Tottenham Court Road, W.

MOTTO.—HIGH EFFICIENCY AND NO MISREPRESENTATION

THE UNIQUE LANTERN LECTURE, DESCRIBING

"Our Prisons and their Inmates."

Prepared and Delivered by HENRY W. NETTLESHIP and HAROLD ROSE,

Illustrated by over 60 Magnificent Photo Slides.

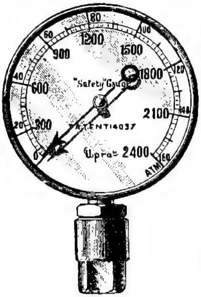
(Taken by Special Permission of the Home Office).

By Messrs. SOPER AND STEDMAN, 147, STRAND.

This is the **ONLY** Lecture extant that deals with and shows Photos of our Convict Prisons. **CONVICTS** At Work—At Recreation—In Chapel—In the Infirmary. Women in Prison, Babies in Prison, etc.

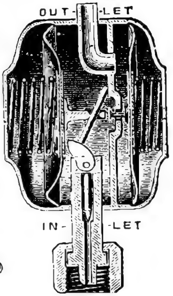
For Terms, write—

Henry W. Nettleship and Harold Rose, 61, Aldersgate Street.



Duplex Regulator

30s.



Sold Everywhere.

SAFETY GAUGE 42s.
"ABSOLUTELY SAFE."

Oxygen from Chlorate of Potash.
Cylinders filled while waiting.
Cylinders—All sizes in stock.
Cylinder Fittings, all kinds.

Professor MALDEN says of DUPLEX—

"Have tried several Regulators, I consider yours decidedly the best, and for complicated effects find them work as smoothly as gas-bags."

Manufacturer—A. CLARKSON,
28, BARTLETT'S BUILDINGS, HOLBORN CIRCUS, LONDON, E.C.

ALFRED H. SAUNDERS,
"The Studio," 36, Heath Street, **BIRMINGHAM.**

LANTERN SLIDE MAKER. (*Wet Collodion Process only.*)
Slides to illustrate Science and other Lectures made from Customers' own Negatives or Diagrams.
ARTISTIC COLOURING A SPECIALITY.
Slides made from 9/- per doz.; Coloured, from 6/- per doz.; according to Style and Quantity.

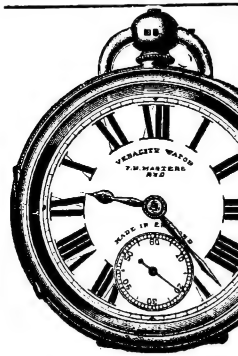
THE TIMBERLAKE SATURATORS
(No. 1, 50s.; No. 3, 35s.)
Are the Safest, Most Brilliant, and best extant.
Will give a quiet light of 500 C.P. and 800 C.P. can be had.
TIMBERLAKE'S SATURINE is the best Hydrocarbon for use with any Saturator, 1d. per oz.
For Testimonials and Particulars send to—
THOMAS TIMBERLAKE, Maidenhead.

Dissolving View Magic Lanterns and Slides
Photographic Apparatus, Scientific Instruments and every description of miscellaneous property.

MR. J. C. STEVENS begs to announce that he holds Sales of the above, every Friday, at half-past twelve precisely, at his great Rooms, 38, King Street, Covent Garden, London.

Gentlemen wishing to include property in these Sales are requested to send particulars one week prior to sale.

MORLEY & COOPER,
70, UPPER STREET, LONDON, N.
LANTERNS, SLIDES AND ALL ACCESSORIES. LECTURER'S LANTERNS FROM 24s
A large stock of New and Second-hand Cameras, Lenses, and Photographic Sundries on Sale or Exchange.
ESTABLISHED 1843.



THE "VERACITY" WATCH.

Guaranteed Absolutely True Timekeeper.
This is the BOLD DIAL Key-Winding "VERACITY," £4 5s.
The "**VERACITY**" is also made with a Fine Dial.
The Keyless "Veracity" £5, *was advertised in this Journal for March.*

Silver English Lever "Veracity" Watch, compensation balance (to keep time in hot or cold weather), jewelled in six holes, silver hall-marked case, with Silver Cap over Works, patent winding work (to prevent mainspring breaking in winding), patent regulator, and all other latest improvements in Watches

The Celebrated Silver 30s. Key-winding Watches sold by Masters, Rye, have gained **SIX PRIZE MEDALS.**
Lady's or Gentleman's Size sent Post Free for 28s. 6d.

TESTIMONIALS
(*Selection free on application*)
HAVE BEEN RECEIVED
FROM ALL PARTS OF THE WORLD
BY THE
"Veracity" Watchmaker,
J. N. MASTERS,
RYE, Sussex.

whose name is very familiar in lantern circles, and who designed a portable gas-holder and retort, the general principles of which will be easily understood on reference to the accompanying diagrams. The apparatus (Fig. IV.) consists of a portable telescopic gasometer (which is so constructed that the upper half sinks into the lower for convenience in packing) and a generator, represented at Fig. V.

The generator consists of a flat plate of iron and a bell cap, which are ground together, forming a gas-tight joint, the plate being heated by a specially-constructed Bunsen's burner fixed beneath. The cap is kept in its place by a bow, seen in the illustration, which is pressed down on to the cap by two spiral springs, situated at its extremities, the pressure being equal to 1½ lbs. on the square inch. When commencing to work it is only necessary to put the upper portion of the gas holder in its place, pour in sufficient water to form a luting round the bell, place a charge under the cap, and light up, after connecting the tubes.

In a minute or two the oxygen generates, and the operation may be continued indefinitely, no matter how long the exhibition may last, and some idea of the amount of attention required may be gathered from the fact that each charge or cake contains 1½ cubic feet of oxygen gas, the bell of the container holding 2 feet.

(*To be continued*).

[A portion of Mr. Wilkie's article dealing with other generators has been held over for want of space.—Ed.]

—:o:—

Polarized Light.—No. II.

By J. J. Briginshaw.

A slide of salicene crystals should be in every collection, as the colours given by projection are among the richest of this series. A method of preparing this slide will serve as an illustration for many others. It, however, forms no exception to the influence of variety of treatment in mode of preparation. Make a saturated solution of the crystals in distilled water, pour a little of the solution in the centre of a glass slide, evaporate over a spirit or other lamp, continue the heat until the salt is melted; then place it on one side to cool, when crystals will commence to form. Touching the film with the point of a needle just before crystallisation takes place will sometimes cause a regular disposition of the crystals, a crystal forming about each point touched.

It does not follow that saturated solutions always gives the best results. This can, however, be made a matter of experiment; if on projection the specimen shows very little colour, it may arise from the film being either too thick or too thin. A very little experience will help to overcome this difficulty.

Succinic and benzoic acid both give exceptionally gorgeous colours, more especially if a plate of selenite in a rotating frame is inserted behind the slide in the stage. A very pretty experiment may be tried with benzoic acid; put a small pinch between two glass discs; with a pair of forceps hold them over a spirit lamp—the acid will soon melt—then quickly secure the glasses in a frame made for the purpose, and place in the polariscope. Almost immediately crystallisation will be seen proceeding on the screen; the effect is very fine. Care should be taken that the glass is not held too near the flame of the lamp, or it will crack and spoil the experiment.

The effect of molecular change in glass and other transparent bodies, consequent upon strain, or sudden change of temperature, seen on the screen is very beautiful. Take a piece of plain glass about 2 inches square and ½ an inch thick, stand it on edge upon a bar of iron heated to redness, then place in the stage of the polariscope; as the glass becomes heated, and consequently expanded, chromatic effects develop on the screen; as the plate cools these appearances will cease. A strip of glass ½ an inch thick, and from 10 to 12 inches in length passed through the stage and gently bent with the fingers will at once show on the screen the effects of the strain, the colours becoming more vivid as the strain increases. Similar phenomena can be produced by pinching a square of glass in a kind of vice, causing a disturbance of the molecules of the glass, the plate in consequence becoming doubly refracted; pressure frames for the purpose are made by opticians; these are furnished with thumbscrews by means of which great pressure can be brought to bear on the glass. Beautiful fringes of colour commence to shoot across the screen, directly it is touched by the screw, the elasticity of the substance being shown by the molecules of the glass flying back to their original position immediately the pressure is removed. A double refractive and polarizing structure may be permanently set up in glass by subjecting it to a high temperature, and then suddenly cooling it between metal plates. The symmetrical arrangement and disposition of the fringes of colour depending on the shape of the glass plate, which may be square, oblong, triangular, or any other form.

Sections of perthite, quartz, granite, agate, and many other mineral substances ground very thin show very fine phenomena; so also will a piece of horn, shrimp shells and fish scales; a quill pen split up one side, boiled until quite soft, and dried flat under pressure polarizes well. Fragments of glass vessels, glass stoppers of bottles and many other common objects often show double refractive power.

——:o:——

Stereoscopic Effects on the Lantern Screen.

WHAT HAS BEEN DONE AND WHAT MAY BE DONE.—No. II.

By Thomas Bolas, F.C.S., F.I.C.

(*Continued from page* 24.)

Probably no one of the various methods currently known to practically all experimental physicists has been so repeatedly re-invented as the Blanchère-D'Almeida method of stereoscopic projection by means of red and green glass interposed in the paths of the light of the two lanterns respectively; the observers being furnished with spectacles of corresponding glass, as described in the previous article. This frequent and independent re-invention has taken place in spite of scientific men keeping the method before students in the demonstration room, and in spite of the frequency with which the conductors of technical journals call attention to it. As a matter of fact stereoscopic matters have been of scant interest to the general public; hence stereoscopic projection has not ordinarily formed a part of the usual lantern show. Indeed, a large proportion of the rank and file of lantern operators, have but little knowledge of matters beyond their ordinary routine work, and as stereoscopic projection has never yet been a matter of every-day lantern practice, they have never heard of it. Now the complimentary colour method is so obvious and the materials required are so easy to obtain, that a very considerable proportion of those who use the lantern but seldom read, have made a discovery of the method quite independently. To such a person the discovery generally seems to be one of very great novelty and importance, and destined to revolutionise lantern practice, as those who have not studied the history of stereoscopic matters cannot realise the popular indifference to stereoscopic effects; indeed, it is natural for the new inventor of the Blanchère-D'Almeida method to suppose that if stereoscopic projection had ever been realised before, it would have been in very general use. Hence it is that he usually makes no enquiries, say of an acquaintance versed in physics, or of the editor of a technical journal, but assumes his invention to be a novelty, and takes his measures accordingly; but only to find that his method is no novelty to those who keep themselves posted in technical progress.

It would be of no practical use to refer in detail to the numerous re-inventions or revivals of the Blanchère-D'Almeida two-colour method, but a few may be touched upon. We find for example, in the February issue of the Optical Magic Lantern Journal, p. 22, Mr. A. I. Le Croft gives an account of its use by Professor Scripture, of Yale University, who emphasises its value in teaching, as by its means a class may often be made to easily realise the nature of a complex piece of machinery, which could only be imperfectly represented by a flat diagram. Similarly, in teaching solid geometry, stereoscopic projection is useful, as flat diagrams are often seen by the pupils in the reverse sense intended by the demonstrator; and in illustration of this may be mentioned cases in which the effect of a diagram representing a solid geometrical construction is liable to alternate between two possibilities, while being looked at.

The revival of the Blanchère-D'Almeida method, by M. E. Schobbens, of Antwerp, is referred to in the volume of the Optical Magic Lantern Journal for 1889, p. 94; and about this time Mr. Molteni worked the method in Paris, giving exhibitions to delighted and appreciative assemblies; but it should be noted that Molteni gave full credit to Almeida and Blanchère. Similarly Dr. Brun, who discussed various stereoscopic projection methods in Liesegang's "Laterna Magica" for January, 1883, speaks highly of his success with the two-colour method, and gives full credit to D'Almeida. M. Fourtier's "Pratique des Projections," the great French standard work on the lantern, published in 1892-1893, gives (vol. ii., p. 118) includes a number of useful notes on the chief methods of stereoscopic projection, and fully credits de la Blanchère with his use of blue and yellow glasses as far back as 1853. Thomas Sutton in his notes, volume for 1858, p. 184, rather fully discusses the two-colour method, and I think I am well within the mark if I say that during 1892, 1893 and 1894 not less than ten mentions of the two-colour method of stereoscopic projection were made in the Optical Magic Lantern Journal and "Photographic Work" alone. The above instances are given to show that only those who fail to read what has been over and over again published, can be unaware of the existence of the two-colour method of stereoscopic projection.

A very remarkable notion, and one which has been put forward very frequently is that by merely super-imposing the two halves of the stereoscopic slide upon a screen, a stereoscopic effect may be obtained, and this view is often attributed to M. A. Claudet. This eminent experimenter and investigator in 1858, published long accounts of an instrument which he called the Stereomonoscope, in which the two halves of the stereoscopic slide were projected by two lenses upon a ground glass screen, the images being super-imposed, and the observer was placed on the other side of the screen, where he was enabled to see the combination with stereoscopic effect. This device must not be regarded as by any means equivalent to the super-imposition of images on an ordinary opaque screen, as M. Claudet distinctly pointed out that if the super-imposed images are received upon an ordinary opaque screen, such as a sheet of paper, no illusion of relief will arise; and with an ordinary screen it is much the same whether the spectators are the same side of the screen as the lantern, or the other side. M. Claudet says: "The difference between ground glass and paper consists in this. The process of grinding the glass does not destroy its transparency—it only disarranges the parallelism of the molecular surfaces, through which the incidental rays have had a free passage when the angles of refraction have coincided with the optic axis. Through these numberless molecular surfaces, each perfectly transparent, and acting like so many prisms or lenses more or less inclined, each eye sees the rays, the incidence of which coincides with the optic axis. But the same eye cannot see those rays of another incidence which emerge through the molecular surfaces in the direction of the other eye. Consequently each eye can only see the rays of which the incidence on the emergence fall perpendicularly to the pupil, and all others are invisible to it. It is not so in the case of paper, which arrests all the rays that illumine it. These rays, as if proceeding from self-luminous paper, diverge in all directions, and fall equally on the line of the optic axis, irrespective of the angle which they form with the surface of the paper." The above quotation should be sufficient to redeem Claudet from the reproach of putting forward the untenable view as to stereoscopic effect with merely super-imposed images, but the following will make his meaning quite clear, and will show that his aim was very similar to that of De la Blanchère as described in my previous article (p. 24); but he sought to realise the same end by using white light only. M. Claudet further says: "It is evident that relief results from the presence of two super-imposed images of different perspectives, each visible only to one eye and invisible to the other; and that the phenomena is the result of the property possessed by ground glass, of refracting through the transparent molecules of its surface all the rays which strike it, and when their incidence coincides with the optic axis they are visible.

Such is the real cause of the production of two images of different perspectives, which though super-imposed on the ground glass, are not visible to both eyes at once." Obviously the stereomonoscope of Claudet, although really involving a true method of stereoscopic projection upon a screen, and this without any particular eye piece or discriminative spectacles, is not applicable to ordinary lantern projection.

Remarkable as it is that the notion of stereoscopic effect by mere super-imposition on an ordinary screen should often be put forward, the contention of Niewenglowski in the *Revue Suisse de Photographic* for 1895, p. 60, appears to me still more remarkable. This gentleman contends that if a positive transparency is placed in the same relation to the lens as the original sensitive plate, a solid image will be reproduced or projected into space, and he suggests receiving it on a concave mirror, and forming an ærial image.

(To be continued.)

——:o:——

Observations Regarding the First Account of Black Light by M. Le Bon.

By Mr. G. Niewenglowski.

(Comptes Rendus de l'Academie.)

I REPEATED the experiment of Mr. Le Bon but in obscurity, without any source of light. The result was the same as that of M. Le Bon, which seems to me to indicate that the image developed on the sensitive plate is due to the luminous power absorbed by the negative at the time of taking positives—power which it preserves and communicates to the sensitive plate. With this fact may be compared the following, noted[*] for the first time by M. Laoureux, and which I have frequently had occasion to observe: —A plate exposed to the camera obscura and not developed, being placed in contact with, or at a slight distance from another sensitive plate which has not been subjected to the action of light, an image can be developed on both, the second being weaker. These experiments, which do not succeed with all plates, seem, as Edes remarked with regard to that of M. Laoureux, to originate in a kind of phosphorescence of the gelatine.

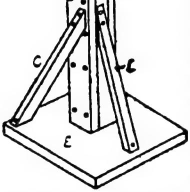
——:o:——

A Simple Lantern Stand.

By E. Drew.

Numerous descriptions have been given of simply made stands for lanterns, but the sketch shows one that may find favour among many lanternists who are not gifted with much carpentering ability. The stand is so simple in its construction, that a description is hardly needed if the accompanying drawing is carefully studied. The stand is adjustable in height, and will be found to be firm in use if made of good seasoned wood, and well screwed together.

Briefly, it consists of a main hollow upright made of four pieces of wood, 2½ in. by 1 in., screwed together so as to form an oblong hollow box, with both ends having an opening of 1½ in. square inside. The lower end has a block of wood screwed in it, and a bolt to pass through it and the base (E). Three uprights (C C C), only two being seen in the drawing, have their ends suitably bevelled and screwed to the main stem (A) and base (E). The sliding part (B), which allows of adjustment of height, is made of 1½ in. square planed wood, and allowed to slide smoothly in the stem (A). The heightening portion (B) is either held in position by a hand-screw or wedge, or by holes bored at varying distances in the sliding piece (B), and a peg inserted. When it is required to tilt the lantern, a hinged board with slotted-brass clamping piece may be used if required. The stand would be found useful for copying with the camera, besides supporting a lantern.



Black Light.—No. II.

Continued from page 39.

Before describing the new results of my researches on black light, I shall make a few remarks with the object of facilitating repetition of these experiments. The rapidity of commercial photographic plates varying in the proportion of 1 to 4, it is evident that, in order to obtain an image requiring three hours' exposition with very rapid plates, no result would be obtained by employing plates with four times less rapidity. Likewise no result if the developer is not sufficiently strong.

I very carefully explained in my previous article that I had removed two factors of error—the possible influence of heat, then that of the light stored in the negatives. After employing various methods (one of the simplest being to cut the negative into two parts, and utilise them for comparative experiment), I decided on a method consisting in the employment only of negatives which had been left for a day in obscurity in contact with the sensitive glass without giving any film in development. If the negatives then give images after exposition behind metal plates, these images can evidently only be due to the influence of black light. I always employ the same negatives. Never leaving their frames except in the laboratory, they could not receive any other light than that passing through the metal plates, viz., black light.

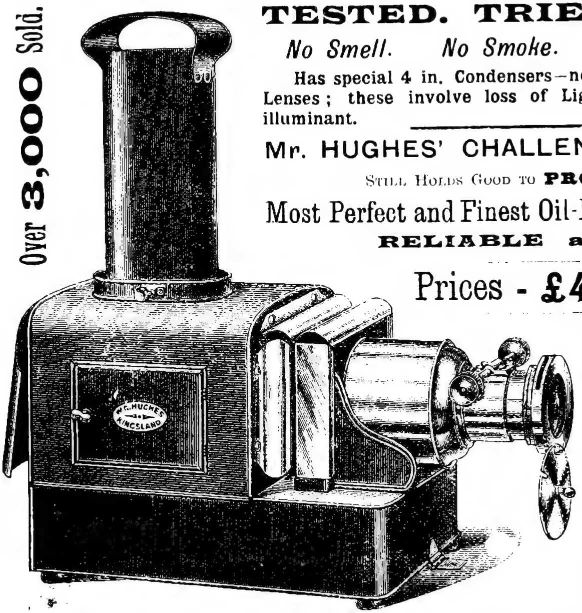
As for heat, I convinced myself, by keeping sensitive plates in contact for twelve hours with negatives in obscure heat of 50° C., that no trace of image was obtained. I only employed petroleum lamps to obtain a constant light.

The light of day gives better results, but has too variable an intensity to allow of comparative experiments. The opaque plates need not be in contact with the negative. The same results are obtained by placing them at a certain distance, so as to isolate the sensitive glass and negative from all metallic contact. I have the honour to present to the Academy some negatives obtained by working as previously described through metal plates about O.S. millimetre thick. The first negative was obtained through an aluminium plate, very transparent to black rays. The image is as good as when obtained by the ordinary methods. The second image was obtained with a thick aluminium metal simply placed on the frame, the circumference being protected with brown paper. The transparency of aluminium to black light is such that an image of the top surface of the metal was

W. C. HUGHES' Marvellous

PAMPHENGOS.

Over 3,000 Sold.



TESTED. TRIED. PROVED.

No Smell. No Smoke. No Broken Glasses.

Has special 4 in. Condensers—not 4½ in. and long focus front Lenses; these involve loss of Light where Oil Flame is the illuminant.

Mr. HUGHES' CHALLENGE of **14** YEARS

STILL HOLDS GOOD TO **PROVE** THAT IT IS THE

Most Perfect and Finest Oil-Lighted Lantern Extant.

RELIABLE and SAFE.

Prices - **£4 4s.** and **£2 10s.**

GRANDEST Display of high-class Projecting Lanterns, Effects, Novelties, available on the Hire Purchase System, seen at Great Show Rooms; a sight to be seen. Docwra prize medal miniature Malden and Grand Triples, superb instruments, supplied to Prof. Malden, Mdme. Patti, Canon Scott, Capt. Charles Reade, Polytechnic Commercial Department. Hughes' 4-wick Lanterns, £1 2s. 6d.; 3-wick, 19s. 6d.; Safety Jets, 8s. 6d.; Mixed, 12s.; Mahogany Brass Bi-unials, £6 10s.; 12 3¼ Coloured Slides, 2s.; large Slipping, 6s. 6d. doz.; beautifully Coloured Model Subjects; 1s. 3d. Magnificently illustrated Catalogue, 160 original engravings, 6d.; postage 2d. Pamphlets free. 50 beautifully Coloured Slides, loaned, 3s.

The only House in the world for High-class Work. Intending Purchasers should see Mr. HUGHES' Magnificent Stock, or they may be disappointed afterwards.

Mr. HUGHES' CLEARANCE LIST (FREE) of Tremendous Bargains in High-class INSTRUMENTS and EFFECTS.

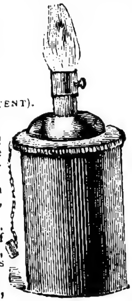
(Established 28 Years.) **W. C. HUGHES,** (Established 28 Years.)

Brewster House, 82, Mortimer Road, Kingsland, N.

FOR DARK ROOM.

"MOONLIGHT"

VAPOUR POCKET LAMP



CHEAP NO OIL! (PATENT).
CLEAN NO DIRT!!
SAFE NO SMELL!!!
INSTANTANEOUS LIGHTING! LASTS FOR EVER!!

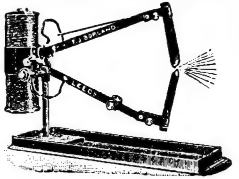
Used always by all photographers who have seen it, also used for railway travelling, workshops, household purposes, &c.
Price in Brass, 1/-, Nickel Plated, **1/6**; from Photographic Dealers; or from Manufacturers, post free, at **4d.** extra.
Other Patterns.—Boudoir, Taper, Cycle Lamps, &c. Illustrated catalogues, free to readers of the MAGIC LANTERN, from S. J. LEVI & CO., 71, Farringdon Road, London, Wholesale Agents or from

THE MOONLIGHT PATENT LAMP COMPANY,
Fenwick Chambers, LIVERPOOL.

IMPORTANT TO ALL LIME-LIGHT USERS!

BORLAND'S PATENT SCISSORS ARC LAMPS

For DIRECT and ALTERNATING Currents.



Made in Three Types:
Hand Feeding.
Self-Striking & Hand Feeding.

The "**Dot.**" The *only automatic* Arc Lamp in the market which fits all ordinary Optical Lanterns on the lime-light tray without any alterations

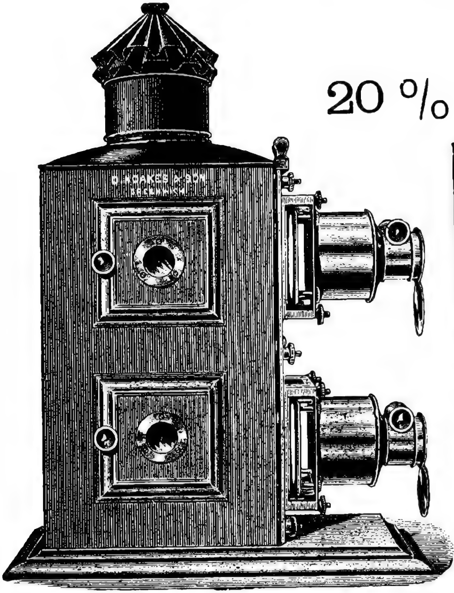
Invaluable for *Theatrical Purposes, Lantern Projections, Enlarging, Printing and Photographing.*

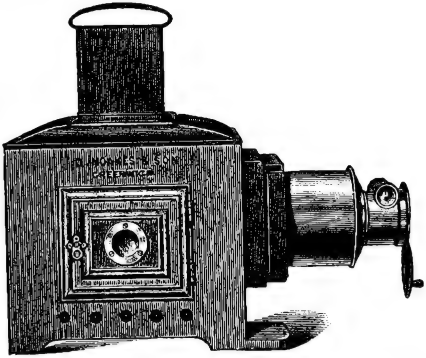
Prices, Particulars, and Testimonials free on application to

F. J. BORLAND, Sheepscar Grove, LEEDS.

If you want to buy the most practical Lantern or Photo Apparatus, of 20 per cent. better finish, at 20 per cent. less than usual cost, send for our Specialities, containing Practical Instructions to Practical Lanternists, post free, Six stamps.

20 %

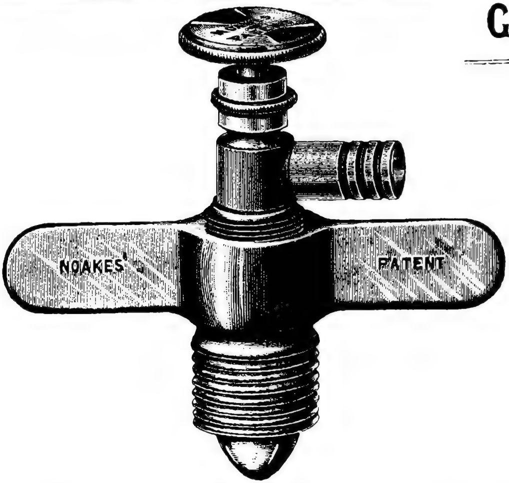


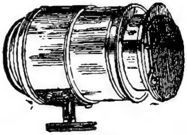


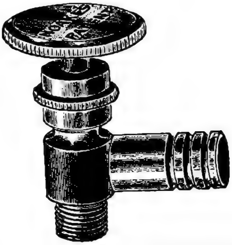
D. NOAKES & SON,

SOUTH LONDON OPTICAL WORKS,

GREENWICH, S.E.







A few High-Class Second-hand Single, Bi-unial, and Triple Lanterns for Sale, BARGAINS.

obtained in less than two hours' exposition. I shall add that there is no pressure of the metal on the sensitive plate, because it is separated from the latter by the glass plate of the frame. The third image was obtained through a brass plate $\frac{8}{10}$ of a millimetre thick. This metal is also very permeable to black rays. The image is very distinct, but incomplete, because it only occupies the central part of the negative. These partial impressions are not rare in these kind of experiments. The fourth image was obtained through sheet iron. It is very pale, but yet rather distinct. Owing to certain technical difficulties, I have not yet finished accurate determination of the relative degree of transparency of various opaque bodies to black rays. I can now give aluminium and copper as the most transparent ; iron is less so. Zinc, silver and tin are very slightly transparent. Black paper, and especially paste-board covered with black paper, are exceedingly little transparent. Black paper (paper employed to shut boxes of photographic plates) is one of substances least permeable to black rays, in spite of its tenuity (thickness $\frac{1}{50}$ of 1 m.m.). If you place black paper on paste-board (which is exactly like the style of packing plates) opacity for black rays is almost complete, always, of course, in poses of short duration.

You will then remark that the rays of cathodic origin very easily pass through black paper; black light hardly passes through. This, besides, is not the only difference separating the black rays from rays of cathodic origin. I shall shortly study in what limits black rays are subjected to the laws of refraction, and the deviations a magnetic field may cause them to make. Some of the results obtained give me to suppose that black light is composed of radiations of a different nature.

——:o:——

The Lantern and its Accessories.

By G. R. Bryce.

It is my aim in this article to set before the reader a few hints regarding the purchase of a lantern outfit or part thereof. Articles have at various times appeared in this journal concerning the purchase and use of a lantern or some accessory, but I do not think there has been one which would serve to guide the novice as to his necessary outlay.

Many non-lanternists suppose that the larger, clumsier, and more like a packing-case the "magic" lantern is, the more able is it to "show" well. It is needless to add that such ideas are foolish, and should be at once overcome.

Optical lanterns are usually made of two metals—tin or Russian iron. In the better class of instrument the metal is provided with a mahogany case, the advantages of which need not be here discussed. The cheapest form of lantern is the japanned-tin kind, with "side door and dome-shaped top." An excellent instrument of this description may be had for 30s., although there are several in the market at a much lower price. Some lower-priced articles are not to be recommended ; it is better to pay a few shillings more and have a good lantern. This shape of lantern may also be had in Russian iron, and for small exhibitions will be found to do well. It is fitted with a 3 or 4-wick lamp, according to price, and may be used for limelight, with the addition of a top, tray, and jet.

But the familiar form of Russian iron lantern "with solid brass fronts, mounted on brass foot," is a much superior instrument, and will be found much more serviceable than the tin one. A better all-round lantern could not be desired, while its price renders it within the reach of almost all. It is light and portable, and will stand a lot of knocking about ; 75s. to 84s. is an average price for an article of this kind.

A mahogany lantern may be had for a few shillings more, and up to almost any price. Besides giving the lantern a better appearance, it also is not so liable to burn the operator's fingers should he happen to touch it at any point where the illuminant makes the inside body hot. Many other advantages might be told, but this would take too much space, and they are so obvious that the reader will be able to see them for himself. The same remarks regarding the preparation for use with limelight apply to these two styles of instrument as to the japanned-tin species, although some mahogany lanterns are only built and intended for use with limelight.

The lamp of the lantern is a part of the greatest importance. The ventilation of those sold with cheap apparatus is often defective, thereby causing great worry and annoyance to the user, besides emitting a much feebler and yellower light than is required. The best lamps are advertised in this journal, for particulars of which the advertising columns must be consulted. Excellent lamps can be had at moderate prices.

When limelight is required in place of the lamp, a jet is necessary to conduct the gases in the correct way to impinge on the lime. For ordinary purposes when house gas can be had from the main, the blow-through jet is used. Compressed oxygen from a steel cylinder or flexible gas bag is blown through a flame of coal gas (or hydrogen may be used from a cylinder or bag) on to the lime, thereby causing its incandescence, and the formation of a most dazzling white light. This jet costs from 8s. to 16s. in its general form, but patent jets of this class may be had up to 30s., which it is claimed give a much brighter light with less consumption. However, it would take a whole article to describe this jet and its advantages, so the reader is referred to the many articles which have appeared in this journal upon it, and also to the numerous announcements in the advertisement columns. The mixed jet is for use with both gases, under pressure from cylinders or bags. Although a new form of this jet is now in the market for use with gas from the main, the general form can *only* be used with gases under pressure. This necessitates an extra cylinder, which, besides being expensive, even to hire, is a source of annoyance when a railway journey has to be undertaken. The light given by this jet is far superior to that by the blow-through. When no coal gas was available, and to save the expense of another cylinder, a methylated spirit jet was used, when a wick saturated with methylated spirits was substituted for the hydrogen. But this jet will undoubtedly give place to the ether saturator, in which the oxygen is saturated with ether vapour, and burns with a flame similar to hydrogen. After leaving the cylinder, the oxygen is separated by a Y or T piece into two tubes, one passing it through the ether, the other leading it in the pure state, till mixed at the nozzle with the saturated gas. The saturated gas in conjunction with the pure oxygen gives a light of about the same power as the mixed jet. A good saturator costs from 35s. to 70s. The following are the names of the principal in alphabetical order: "Climax," "Gridiron," "Lawson," "Optimus," "Pendant," "Timberlake" (two varieties). The incandescent gas light has also been applied to the lantern, and for a small disc (not above, say, 8 feet) may answer fairly well, but beyond this limit it is too weak, and the limelight is, of course, far superior. The cost of incandescent gas appliances is about 15s. complete.

Double and triple lanterns are, as a rule, intended for use only with limelight. For their proper manipulation, a dissolver or dissolvers is necessary. For a bi-unial, a 6-way Star dissolver and for a tri-unial, a 4-way Star dissolver is required besides. These lanterns are generally of the mahogany type already described, and were first made in the upright form to avoid the operator having to move from one lantern to the other, when placed side by side.

The electric arc light may be used in any of the foregoing lanterns. The lamps for this brilliant illuminant for use in the lantern are now numerous, and may be had for £4 4s. more or less.

Unless the lantern is to be used very often, a cylinder for the storage of oxygen will be unnecessary, as for occasional exhibitions it will be found more convenient to hire one. Should the lanternist wish to purchase one, however, he will require to decide what size will suit him and his purse. For travelling with, a 20-feet bottle will be found most convenient, I think. When purchasing, it should be borne in mind that the smaller the quantity of gas the cylinder holds, the oftener it will require to be filled, and that small quantities of gas are dearer per foot than large quantities. 40-feet cylinders are rather heavy and big to travel with, but for permanent use in one building, they will be found less expensive in the end than smaller bottles. These cylinders vary in price, but 36s. is the average for the 20 feet size. They increase in price as they increase in capacity. A cylinder to hold 80 feet costs about 70s.

Very few lanternists now use gas-bags. They are more expensive, to begin with, and do not last nearly so long as good cylinders. The pressure boards which must be used with them are anything but portable, and 56-lb. weights are not exactly the things one wishes to carry about. Substitutes may be made for the weights, it is true; but compare this trouble with the ease of working with a cylinder. Convenient gas-holders may be cheaply made, and for use in one place will answer their purpose. Good ones were described in this journal for April and November, 1895.

If cylinders are employed a regulator for each will be found an advantage. With double or triple lanterns, regulators are necessary. They may be had from 15s. to 40s. "Fine adjustment valves," however, can be bought for 7s. 6d. For measuring the contents of a gas bottle, a pressure-gauge is used. This is sometimes used in conjunction with the regulator, so that the user may tell at a glance how much gas remains in the cylinder. A cheap gauge, the "Pocket Pressure Gauge," was at one time obtainable but cannot be used at the same time as the regulator. When full, the cylinder should indicate 120 atmospheres on the gauge; half-full, 60 atmospheres; quarter-full, 30 atmospheres;

THOMAS'S

LANTERN PLATES

Still maintain their supremacy.

ONE QUALITY ONLY.

All colours, from black to the warmest purple, easily obtainable without toning.

The Best Plates for all kinds of

TRANSPARENCY WORK,

Either by contact printing or reduction in the Camera.

THESE PLATES ARE SPECIALLY RECOMMENDED FOR PHOTOMICROGRAPHY

ON SELECTED THIN GLASS, 3¼ x 3¼, **1s. per doz.**

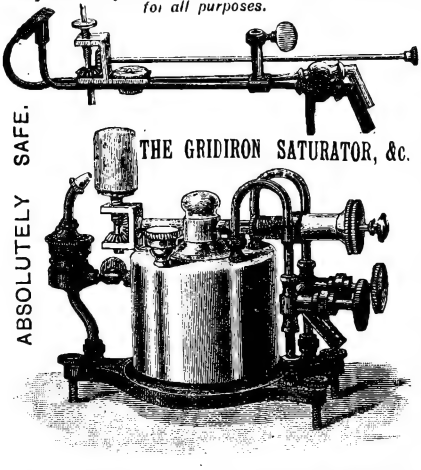
SOLD BY ALL DEALERS.

R. W. THOMAS & CO., Ltd., Pall Mall Factory, Thornton Heath.

Telegrams: "SPEED, THORNTON HEATH." Telephone No. 9365.

F. BROWN,

Manufacturer of Limelight Jets of every description for all purposes.



ABSOLUTELY SAFE.

THE GRIDIRON SATURATOR, &c.

Gives the best light; no pops; no noise; most economical; lightest and best made Saturator extant. New list containing further details of the Saturator and other Apparatus, Post Free.

11 & 13, OSSULSTON STREET, LONDON, N.W.

Publishers of Lantern Slides.—Slide makers who have not facilities for preparing designs and negatives, and all who are interested in the production of original and high-class drawings, life model pictures, and plain and coloured slides, will find it to their advantage to get quotations from

FRANK R. HINKINS,
ROYSTON, CAMBS.

Lantern Slide Producer to the Royal Society P.C.A., Humanitarian League, and many of the leading Societies, Science Colleges, Lantern Caterers, and Wholesale Opticians.

SANDS, HUNTER & Co.,

Photographic Apparatus and Lanterns,

NEW AND SECOND HAND, BY ALL THE BEST MAKERS.

Lanterns and Operator let out for evening entertainments for children, &c. Terms Moderate.

20, Cranbourne St., Leicester Square, London, W.C.

Lantern Slides and Photos

OF THE

SHIPS OF THE CHANNEL SQUADRON,

Including one of H.M.S. "Majestic" steaming full speed, "Magnificent," etc.

ALSO

SHIPS OF THE FLYING SQUADRON,

"Royal Oak," "Revenge," "Gibraltar," "Thesius," "Charybdis," "Hermione," "Sharpshooter," Torpedo Destroyers.

PHOTOS (11 by 9), price 2/6. SLIDES, 1s.

G. WEST & SONS,

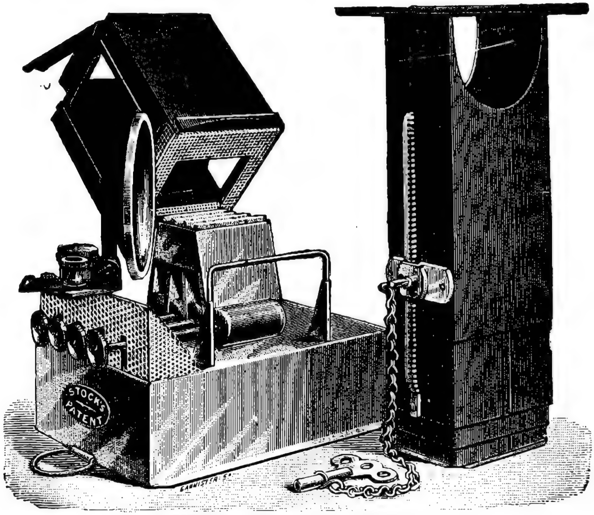
Marine Photographers, SOUTHSEA.

STOCKS' Patent Lamp for Optical Magic Lanterns

IS THE **MOST POWERFUL** LAMP EXTANT.

109 STANDARD CANDLE-POWER.

109 STANDARD CANDLE-POWER.



109 STANDARD CANDLE-POWER.

PRICE, 28/- EACH.

COPY OF CERTIFICATE OF TEST.

"This is to certify that I have this day tested one of Stocks' Patent Oil Lamps for Optical Lanterns, and find that the light given by it is equal to **109** Standard Candle-power; also that the multiple flame is very compact, and when used in a Lantern, a very evenly-illuminated disc of great brilliancy and purity is produced, far exceeding that of the ordinary 4-wick lamps.

" *October* 10*th*, 1894. (Signed) W. J. COLES, A.M.I.C.E."

These Patent Stocks' Lamps, of 109 Candle-power, can be purchased from all Dealers PRICE 28s. each.

The "Ejector" Blow-Thro' Jet.

513 STANDARD CANDLE-POWER. Price 20s. each.

The following is an extract from a report by Mr. W. J. COLES, A.M.I.C.E.:—

" This Jet was tested in order to ascertain—Firstly, its illuminating power, and secondly, the consumption of Oxygen. The results are as follows:—The maximum obtainable light was 513 candle-power with 13 in. pressure of Oxygen and ⅜ in. pressure of Hydrogen. The Ejector arrangement of Jet causes an increase of pressure of Hydrogen at Jet of over 100 per cent., that is, before turning on Oxygen the pressure of Hydrogen is equal to ¼ of water, but when the Oxygen is flowing a partial vacuum is created, which causes a greater flow of Hydrogen, and more than doubles its pressure at the Jet. Soft Limes are practically useless for this Jet, as they burn away very rapidly. 'Hardazion' are the best. The distance that the lime should be from Jet is about half-an-inch."

This Jet is QUITE AS POWERFUL as any ordinary Mixed Jet, with the GREAT ADVANTAGE that only ONE CYLINDER OF GAS (Oxygen) is required, the house gas being taken from the main as with the ordinary Blow-through Jets.

NOTE.—None are genuine " Ejector " Jets unless stamped on each Key with the following Trade mark:—

TRADE MARK

and so on. Although the gauge does not show the number of feet in cylinder, this may be easily ascertained, as the reader will perceive from the last sentence.

If the lantern outfit is to be complete, a screen to project the picture upon, and a frame to stretch it, should be purchased. Linen is the best cloth for the sheet as it reflects the greatest amount of light. Calico is the next best. For house exhibitions 8 ft. or 9 ft. is a convenient size, and square sheets of these dimensions may be had ready taped and without seams for 9s. (calico), and 24s. (linen). In the larger sizes the sheets are in two pieces, joined with wide width in centre. The frame to stretch the screen upon is rather an expensive luxury; for the above sizes of sheets it costs from 16s. to 30s. A much cheaper and quite as effective frame, is that one which I described in this journal for February, 1895. In the 8 ft. size it costs 5s., an enormous saving on the commercial article. Directions for the making of other cheap frames have also been given very frequently in this journal. When the sheet and frame do not require to be carried about, the style of screen will be found convenient, which is mounted on rollers and supplied with cords, so that it can be rolled up out of the way when not in use. As this device combines sheet and frame, it costs slightly more than the price of either, but less than the price of both.

For holding the slides in the proper position in front of the condenser of the lantern, a "carrier" is employed; there are many forms of carriers. The best, I think, and the one most used is the "to and fro" kind. Although this has disadvantages, it works smoothly and noiselessly, which the more complicated patent dissolving carriers do not always do. One variety of this carrier has the corners cut off, which allows the slides to be inserted or withdrawn by merely touching the corners, and not fingering the centres as in the simpler kind of carrier. This carrier has also been designed to raise the slide as it is withdrawn from the lantern stage. The fingering of the slides is also avoided in this species. Davenport's patent curtain slide carrier gives the effect on the screen of an opaque curtain descending to obscure the picture, and rising again to reveal a fresh one. It is made in two varieties—for use in open stages, and for use in any stage. The former costs 5s., the latter 7s. 6d. The price of the "to and fro" pattern is about 2s. The other forms of carriers are too numerous to describe; let it suffice to mention them :—Beard's (two kinds), Hughes', "Push Through or Panoramic," "Universal Dissolving," "Uno Mano," and many others.

The general size for lantern slides is 3¼ in. by 3¼ in. They are sometimes mounted in mahogany frames, but in this condition are not suitable for use in a single lantern, as the clumsiness and difficulty of changing such would be tiresome both to operator and audience. For use in the single lantern, unmounted slides are placed in the carriers already referred to, and thus pass smoothly in and out of the instrument without the unsightly whiteness on the screen. It would be difficult to name a subject upon which lantern slides cannot be had. Even life in prison is depicted so graphically to an audience, who sit in comfortable, cushioned seats, that they begin to feel like the convicts themselves in their dingy cells. Travel, history, biography, science, subjects sacred and secular, all furnish some interesting views reproduced by the aid of photography. The usual price of plain photos is 1s., or coloured, 2s. each. When a set of slides is purchased, a reading to describe them is also to be had as a rule. The lecturer would do much better to compose a lecture to suit the slides, and entertain his audience, than read a prosy, printed book, every second minute attracting attention by his efforts to turn a page. Should the lecturer, however, require to read his lecture, or refer to his notes, a reading lamp must be used, for any attempt to read in the darkness of the lantern exhibition-room would be futile. Stands are made to support the manuscript, but may be dispensed with if a table is available. Reading lamps vary in cost from 2s. to 10s. The method of communication between the lecturer and operator is often very defective. When it is necessary to change a slide the lecturer sometimes gives a click from a "distinette" or a red-light signal from the lamp, but more often by a harsh knock or resounding bell. These methods all attract attention. A noiseless—so far as the audience is concerned—electric signal should be employed as a means of communication between platform and lantern. Instructions regarding the manufacture of one of these signals may be seen in the OPTICAL MAGIC LANTERN JOURNAL for January last.

A ready reference table, for showing the distance the lantern should be placed from the screen to give a disc of a certain size with a lens of a certain focus, may be had for 2½d. at the office of this journal, and will be found handy. The MAGIC LANTERN JOURNAL will, of course, be taken by every right-minded lanternist, and will undoubtedly prove a great help.

Oil Lamps.

By The Showman.

It would be exceedingly interesting to know what proportion the number of oil-lit lanterns sold bears to the total numbers which each year find their way into the hands of users. Unfortunately there are no figures available on this subject, but it may be taken for granted that, even excluding toy lanterns, oil-lit lanterns are greatly in excess of all other kinds. Before the introduction of the first modern form, which was known as the sciopticon, lanterns were generally fitted with a fountain lamp having an argand burner and glass chimney, and arranged to burn sperm or colza oil. Such lamps were very tolerable if properly managed and kept scrupulously clean, and possessed the advantage over petroleum lamps that the fatty oils used in them did not sweat or creep in the same way as petroleum. On the other hand, if neglected they soon become clogged and covered with gummy oil, which nothing less than plenty of soda and boiling water would remove.

Since the introduction of the sciopticon, a more or less stereotyped pattern seems to have been followed by all makers, with slight variations in the capacity of the oil tank, the number, width, and arrangement of wicks, the size and shape of the flame chamber, and shape and height of the chimney. If we take one of the best of these lamps and test the light under favourable conditions with a photometer, a reading of about one-hundred candle-power will probably be obtained. Now, if one of the old-fashioned argand lamps is available, clean it and get it to work nicely, and a photometric test will probably show it to be yielding a light of about thirty candle-power. The relative power of the two lights then is as ten to three. Now place the two lamps in similar lanterns, and arrange the lanterns so as to give two discs side by side upon the screen. The discs should be of the same size, or rather, the projections of two slides having similar mounts should be of the same size when in focus. Be careful that the two objectives are of the same diameter and form, and are not fitted with stops.

Many of the old-fashioned lanterns were fitted with objectives, which, being stopped down to gain definition, handicapped the performance of the lamp considerably. Remove the slides from the stages, and look at the lighting of the discs. It will now be noticed that the ratio of ten to three no longer holds good, the disc from the lantern containing the colza lamp being at least half as bright as the other. From this we learn the value of concentration in any radiant intended for optical purposes. The flame of the colza lamp is cylindrical in shape, and about $\frac{11}{16}$ of an inch in diameter, the petroleum lamp flames occupying a cross-sectional area of about 2 inches by $\frac{3}{4}$ of an inch; so that if the focus of the condenser falls in the centre of this area, it follows that the front edges of the flames are an inch too close, and the back edges an inch too far away.

If we examine the powerful oil lamps with which lighthouses are sometimes fitted, we find that the burners are arranged with several circular concentric wicks, and it is to be regretted that lantern makers do not pay attention to the possibilities of a miniature lamp with two wicks only on this principle. Were they to do so, and produce a lamp with concentrated and consequently efficient flames, other advantages would most likely accrue. At present, users of oil-lit lanterns have to put up with the inconvenience of being confined to the use of short-focus objectives, and of being unable to tilt the lantern to an angle of more than 4 or 5 degrees. The use of a long-focus lens necessitates the radiant being placed slightly nearer the condenser, which with the size and shape of the flame chambers of petroleum lamps as now made is an impossibility. Again, if a lamp be tilted to the extent which is desirable, not only will the tank probably overflow, but the flames will strike the front of the chimney. A lamp with a small compact flame chamber, fitting the flames in the same way as the glass chimneys of our domestic lamps, will by going closer to the condenser permit of the use of longer focus objectives than are at present employed, and will most likely allow of tilting to an angle of from 20 to 25 degrees. To prevent the oil from being spilt, the lamp should swing on a pair of gudgeons placed horizontally at right angles to, and on a level with the centre line of the optical system. These gudgeons should be supported by side brackets from a tray, to which the reflector would be fixed either permanently or with provision for adjustment, the tray sliding in the usual grooves in the base of the lantern. The lantern could then be set up horizontally and the lamp carefully adjusted, and the lantern then tilted the requisite amount, when the lamp would simply swing on its gudgeons and maintain its horizontal position owing to gravity. As the gudgeons are on the optical centre line, the lamp would swing as it were on the centre of the flame, and the previously made adjustments would be in no way interfered with.

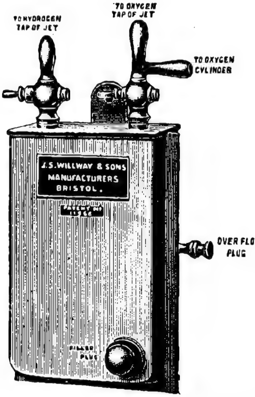
BENETFINK & Co.
THE GREAT CITY DEPOT FOR
MAGIC LANTERNS,
ALSO FOR
Enlarging Lanterns and Cameras.

Lantern Slides in great variety, Life Model Subjects, plain and coloured, chromo lithographic, 3s. 9d. per set of 12 slides, 3¼ in. square, complete in box with Reading, 100 different subjects. Large stock kept of Rackwork and Slipping Slides. Lantern Catalogue with hundreds of illustrations.

POST FREE ON APPLICATION.

89, 90, 107, 108, CHEAPSIDE, LONDON, E.C

The PENDANT SATURATOR.


TO HYDROGEN TAP OF JET
TO OXYGEN TAP OF JET
TO OXYGEN CYLINDER
J. S. WILLWAY & SONS MANUFACTURERS BRISTOL.
OVER FLOW PLUG
FILLER PLUG

ABSOLUTE SAFETY.

Capacity equal to 20 cubic feet of Hydrogen.

No trouble from fluid in tubes.

Perfect steadiness. No readjustment of tap required after starting. Great brilliancy.

Price 35s.

Revolution in Jets!!!

1,500 CANDLE-POWER.

Gwyer's Patent Jet

Was FIRST in the recent

LIMELIGHT CONTEST

On the 22nd of JANUARY.

Is equally efficient for Mixed Gases and Ether.

Write for Particulars to the Manufacturers—

J. S. WILLWAY & SONS,
DRAWBRIDGE, BRISTOL.

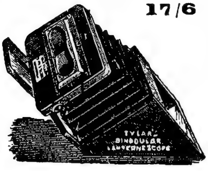
TO SAVE PROFANITY AND PREVENT INSANITY

12/6

Use TYLAR's pliable Lantern Slide Binding Strips, paper, 100 in tin 1s.; linen, 50 in a box 1s., post free 2d. extra. They stick at once and stick fast.

THE PLEASURES OF A FIRST PIPE, illustrated by 3 Slides from Life, 2s. 6d., post free 2s. 9d.

THE LIFE OF A MONK. 3 Slides from Life, 2s. 6d, post free 2s. 9d. These Slides fetch down the house wherever shown.



17/6 TYLAR'S LANTERN SLIDE REDUCING CAMERA, well made in Mahogany and is thoroughly effective, for ½ plates and under, 32s. 6d.; 1/1 plates and under, 45s.; 10 by 8 and under, 55s with Lens complete. FIXED FOCUS REDUCING CAMERAS from 12s. each.

The HALL-EDWARDS Slide Binder, 5s. 6d., post free 5s. 9d.

TYLAR'S LANTERNESCOPES as illustrated, single 12s. 6d., double 17s. 6d. each. Full Catalogue, over 300 wood cuts, post free 4d.

Tit Bit Guide to Photographer, special List of Lantern Appliances, post free 1d.

W. TYLAR, 41, High St., ASTON, BIRMINGHAM,
OR OF ALL DEALERS OF REPUTE.

MAGIC LANTERN JOURNAL

AND

PHOTOGRAPHIC ENLARGER

ALMANAC AND ANNUAL.

Editor - - J. HAY TAYLOR.

In addition to the OPTICAL MAGIC LANTERN JOURNAL AND PHOTOGRAPHIC ENLARGER, it has been decided to issue an Annual in connection with same.

As it is well-known, the journal has, under the Editorship of **Mr. J. HAY TAYLOR,** been the means of greatly popularising the subjects upon which it deals, and by the issue of an Annual Almanac treating upon the same subjects, **also under the Editorship of Mr. J. HAY TAYLOR,** there is not the least doubt but that it will achieve the same success that the journal has.

For some time past many letters, with suggestions, have been received urging us to take this step; and to intending Advertisers in the Almanac we have pleasure in saying that, according to the present calculation, some **5,000** copies will be taken up readily by those directly interested in the subject.

Many novel points will be introduced, in addition to which it will be of convenient size and well got up.

A certain number of pages will be reserved for the display of Advertisements, and as these will be filled up in the order received as to the best positions, we would ask early co-operation in this matter, for the volume will be issued at the very commencement of the season when users and buyers are beginning to consider their wants.

The size of the pages will be Demy Octavo, and Advertisements can be booked at the following rates:—

Several Pages	By arrangement.
One Page	£2 2s.
Half-Page	£1 10s.
Quarter-Page	15s.

THE MAGIC LANTERN JOURNAL CO., LTD.

Offices—9, CARTHUSIAN STREET, LONDON, E.C.

Topical Notes.

By The Dreamer.

The Parliamentary Committee appointed to enquire into the compressed gas cylinder question has at last issued its report. It reports that the matter has been referred to the Board of Trade.

This farcical result is only in accord with the usual red-tape procedure. After months of waiting, and presumably investigation and deliberation by one body of men, the matter is to be taken in hand by a second body.

Like the countryman and the claret, we "don't seem to get any furrader." However, the damage has been done, as far as the trade is concerned, and now a delay of a month or two will not make much difference.

I have not yet seen one of Gwyer's new mixed jets, but if all that is said about it is true, it will prove a decided advance in jet manufacture.

The present boom, as regards the lantern, appears to be in the direction of "animated projection." Some time ago we had Friese Greene's apparatus, but latterly quite a host have arisen.

In the race for first place as regards public exhibition priority, the foreigner wins, Messrs. Lumière's projection kinetescope being on view in the Marlborough Hall, Regent Street.

Birt Acres had promised to show his arrangement at the London and Provincial Photographic Association, but hearing of the Marlborough Hall demonstration, he preferred to wait a little longer and perfect his instrument, rather than show it in an incomplete state.

Finally, R. Paul, of Hatton Garden, who, I believe, has had a good deal to do with kinetescopes, promises to exploit his theatrograph at an early date, and probably before these lines are in print, it will have been exhibited at a central hall or at Olympia.

In Paris the exhibition of kinetescope pictures by projection has met with wonderful success, and the proprietors appear to be reaping a rich harvest at one franc per head.

From all I hear the latest oxygen generator is a good thing. It is completely automatic in action, at all events for an hour and a half or two hours, and few lectures last longer than that, and then five minutes' attention will start it off again for a similar period of time.

——:o:——

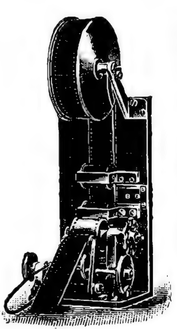
New Apparatus.

AERIAL GRAPHOSCOPE.

Some few years ago the inventor, Mr. Eric Stuart Bruce, M.A., Oxon, exhibited at the soirée of the Photographic Society of Great Britain (now the Royal Photographic Society) an instrument called the aerial graphoscope, containing two fans, which, when rotated *a la* windmill, sufficed by persistance of vision to form a screen upon which lantern slides could be projected. During the past month a certain amount of improvement and modification has been added to the appliance, which was exhibited at the Town Hall, Kensington. With this aerial screen various adaptations may be shown, including persistence of vision to large audiences, pictures projected in space, stage ghost effects.

THEATROGRAPH.

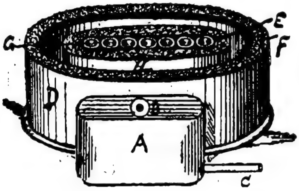
The outcome of the experiments of Mr. Friese Greene, which we described in this journal of November, 1889, has been the means of others inventing apparatus with which to achieve similar results. Negatives are taken of a moving object in rapid succession at the rate of several each second, and transparencies from same are projected on the screen. One of the latest apparatus is the theatrograph of Mr. R. W. Paul, of 44, Hatton Garden, E.C., an illustration of which is shown herewith. The apparatus is strongly constructed of steel, gun-metal, and aluminium, and of such size as to go between the condenser and objective of an ordinary lantern. The film containing the instantaneous photographs is drawn from the spool at the top of the instrument, and passes under



the rollers and presser-pad in front of the oblong aperture through which the light shines, then under an aluminium sprocket-wheel to a second spool, on which it is automatically wound up. Each turn of the horizontal shaft, which is driven from a small hand-wheel, actuates a cam which instantaneously shuts off the light, and at the same time the sprocket-wheel is acted on by a steel finger, causing it to move forward the space of one picture; the film is then locked in position for projection, the shutter opens and allows the picture to be projected. In this way the film is at rest the greater part of a revolution, giving a bright image. The rapid revolution of the shaft causes successive pictures to appear without discontinuity, as in the kinetoscope, until the whole scene has been presented. This instrument is now being exhibited at Olympia, and is creating a great sensation.

KEY'S FLASH LAMP.

Mr. Henry Alphonse Keys, of 17, Apsley-road, Walthamstow, has lately patented and brought out a new flash lamp which is deserving of great credit, as it is constructed in such a way that a continuous light of extreme brilliancy may be obtained, whilst every particle of the flash light powder is consumed by reason of the completeness of the flame surrounding the outlets. The lamp is 3½ inches in length, 2½ broad, and 1½ deep. There are a double row of wicks, the outlets being in the centre of the inner wick. (A) is the container for the magnesium powder which is introduced at (B). Into the body of the lamp proper (D), a small quantity of methylated spirit is poured into the space (H), between the wicks (E) and (F). The outlet tubes (G) are spread fan-fashion so as to enable the flame produced to be as large as possible. A rubber tubing with a mouth-piece *a la* tobacco pipe is sprung on at (C), and the flash of flame lasts just as long as one blows into the mouth-piece. By a series of holes the spirit finds its way from the trough (H) to the two wicks (E) and (F). When not in use, a cap covers the wicks and outlet tubes. This lamp is a simple, complete and effective one.



—:o:—

Patent Intelligence.

The following list, relating to current Patent Applications, is compiled expressly for "The Optical Magic Lantern Journal" by a registered Patent Agent. For further information apply to The Patent Department, "Optical Magic Lantern Journal," 9, Carthusian Street, London, E.C.

No. RECENT PATENT APPLICATIONS.

3777. 19th February, 1896. H. W. Short. A new or improved means for giving intermittent motion to a strip or film for taking or exhibiting photographs.

3949. 21st February, 1896. R. D. Smith. Combined reducing and enlarging camera for making lantern plates.

4340. 26th February, 1896. G. Munroe and J. W. Kelly. Manufacture of oxygen, hydrochloric acid, and other products.

4470. 28th February, 1896. J. A. De Gruchy. Improvements in and connected with saturators, for use in limelight, and the like apparatus.

4548. 29th February, 1896. F. J. Stedman. Improvements in and relating to apparatus for the production of oxygen gas.

4166. 25th February, 1896. H. W. Short. A new or improved means for exhibiting or displaying consecutive photographs or pictures of moving objects or figures.

4168. 25th February, 1896. R. W. Paul. Apparatus for the reproduction of theatrical and other stage performances.

4686. 2nd March, 1896. R. W. Paul. Improvements in apparatus for projecting kinetoscope pictures on the screen.

4748. 3rd March, 1896. A. J. Beaumont. An arc lamp for optical lanterns, etc.

4841. 3rd March, 1896. Johnson (Latham). Improvements in means or apparatus for exhibiting pictures of moving objects on to a screen or other surface.

5133. 7th March, 1896. L. Chapman. Improvements in the separation and obtainment of oxygen from atmospheric air.

5134. 7th March, 1896. L. Chapman. Improvements in and in the preparation of materials for use in the retorts of furnaces in obtaining oxygen from atmospheric air.

5135. 7th March, 1896. L. Chapman. Improvements in apparatus for automatically operating cocks and valves, so as to change the communications as desired, and remove superfluous gases in certain processes, more especially in obtaining oxygen from atmospheric air.

5136. 7th March, 1896. L. Chapman. Improvements in air and gas compressing pumps.

RECENTLY-PRINTED SPECIFICATIONS.

Copies of the following specifications may be obtained by remitting 1/- for each specification to The Patent Department, "Optical Magic Lantern Journal," 9, Carthusian Street, London, E.C.

6468 of 1895.	Fitzpatrial (Fuhrmann). Dioramas.
7104 of 1895.	Selle. Producing coloured pictures.
6545 of 1895.	Davenport. Arc lamps.
6777 of 1895.	Gearing. Acetylene generating and storing apparatus.
3613 of 1895.	Edwards. Photochromoscope.
6602 of 1895.	Schachinger. Producing indelible pictures on glass.
6790 of 1895.	Picking. Producing engravings, etc., on glass.
16502 of 1895.	Decretet & Lejeune. Acetylene.
1116 of 1896.	Rossbach-Rousset. Acetylene gas.

——:o:——

Editorial Table.

"MODERN MICROSCOPY," London: Balliere, Tindall & Cox, 21, King William Street, Strand, W.C. 3s. 6s. This handsomely bound volume, which is devoted for the most part to beginners, is a dual production from the pens of Mr. M. I. Cross, and Mr. Martin J. Cole. The former treating in a masterly manner of the microscope as an instrument, and giving details of its various portions and the parts they play; the latter writer gives information upon the preparation and mounting of objects. The reader will find from cover to cover that each page creates a new interest, and ere many pages have been digested he who does not possess a microscope will see the advantages that are obtainabe from the possession of one.

"INTENSITY COILS."—Amateurs desirous of experimenting in connection with X and other rays, will do well to peruse a book called "Intensity Coils," published at 1s. by Messrs. Perken, Son, and Rayment, 99, Hatton Garden, London, E.C. In its 80 pages many subjects are to be found, which will tend to the profitable passing of an occasional hour.

SLIDES OF SOUTH AFRICA.—A set of 60 slides relative to Kaffirs, Boers and Britains, in South Africa, being a story of British enterprise in the Dark Continent, with the thrilling account of Jameson's Dash to the Transvaal, has been brought out by Mr. Walter Tyler, of Waterloo-road. The set being very exhaustive, and showing native life in different aspects, will be sure to have an enormous run.

——:o:——

Correspondence.

CARBON LANTERN SLIDES.

To the Editor.

SIR,—In an article in your last issue, by Mr. Duncan Moore, on the best kind of lantern slides, I think that carbon transparencies should have been included in the number; for, in my opinion, in which I am backed up by many skilful lanternists, carbon tissue will give us slides of unexceptionable quality, and of any colour. The pigments in the tissue, made expressly for transparencies, are in such an extremely fine state of division that granularity is quite imperceptible with the largest degree of amplification ever likely to be required.

The late Mr. Smith, of the Sciopticon Company, was *facile princeps* in the manufacture of lantern slides by this process, and was especially happy in the results he regularly obtained; in fact, when his slides were shown in comparison with those by other processes, they were considered quite as good, if not better, than the best examples obtained by development in the ordinary manner—albumen films being the nearest approach to it for quality. Then, again, carbon can be made any colour. The nature of the image is such that it consists of different thicknesses of the same colour, the highest lights being bare glass; thus rendering the successful application of any dye an easy matter, as, although the tint may be altered, the gradations remain constant, which is more than can be said of most other processes. A great variety of effects can for this reason be easily produced. In many cases a colour not being approved can be removed, and another substituted, as almost any liquid that will stain can be applied—Aniline dyes, ink, permanganate of potash, ammonic sulphate of copper, etc. For instance, a slide darkened with ink can be restored to its original condition by a bath of dilute hydrochloric acid, and so on; but setting aside colour possibilities, the richness of a carbon image cannot be improved upon.

Should we wish to reproduce a negative, we adopt a carbon transparency as the best medium for this purpose, as being far better than any other kind of image. Experienced photographers can testify that there is that peculiar quality in a carbon image that, although somewhat difficult to describe, is readily appreciated; doing away with all harshness, especially when there are strong and abrupt contrasts of light and shade on the negatives to be copied. A reproduced negative, with this intermediary, is sometimes better than the original; very rarely, if ever, the case with any other process. So far as pure photographic quality is concerned, it is my opinion that if carbon work was better known to amateurs it would become the process for transparency work of nearly all kinds. It is simple in the extreme—not much more trouble than ferro-prussiate printing—a basin of hot water and a little alum comprising the whole of the requirements when the tissue is purchased ready sensitised, and when not, the only additional things are a little ammonia and bichromate of potash to make the sensitising bath.

With so much to recommend it, and so few drawbacks, it is somewhat difficult to understand why it is not more generally used.

S. BROWN.

LANTERN SLIDE EXCHANGE.

To the Editor.

SIR,—Will you kindly grant me space to say to those whom it may concern that I propose to close the "Lantern Slide Exchange" at the end of the present season, it having I think, fulfilled its purpose. I, however, will keep the set of lists by me, and I shall always be ready, on receipt of a post-card, to forward it on to any of the present members who may desire, on some future occasion, to make use of it. Various communications have shown me that the Exchange has been of considerable benefit to many of the members, and no doubt in a year or so's time it would be well to start it again.

I will take this opportunity of thanking you, sir, for the interest you have taken in the matter, and I should also like to tender my grateful thanks to those correspondents (for the most part strangers to me) whose friendly letters and courteous suggestions have rendered the work connected with the Exchange the reverse of tedious.

I am, &c.,
A. M. HIDDON.

2, Thames Place,
Putney.

ANCIENT WATER AND FLOUR MILLS.

To the Editor.

Sir,—I am desirous of obtaining information as to photographs of any of the ancient water and wind flour mills existing in various parts of the country. Most of these are sufficiently picturesque to have gained the attention of many a tourist wandering with his camera through the country, and also many a professional photographer. Will you allow me to enquire from your readers, as to the whereabouts of any of these mills, as I am anxious to obtain as many photographs of them as possible. These I purpose using (as illustrations of a style of mill which has now passed away) in my "History of British Corn Mills," which is almost ready for press. Any information direct, or published in your columns, will oblige.

Yours truly,
R. BENNETT.

Liverpool.

——:o:——

Notes and Queries.

J. T. Wells.—Letter with the address was sent on to you. Gasoline may be obtained from Carlus Capel and Lennard, White Post Lane, Hackney Wick, London, E.

R. H. Ramsay.—Thanks for photograph.

H. Ashton.—Several articles specially for teachers will be found in our last two volumes.

H. S.—Canada Balsam can be thinned either with turpentine or by heating. We cannot say how much of the former to add, as we have no means of knowing how thick your supply is. Make it so that it can be poured.

J. D.—Screw asunder all the parts of the jet, and clean each separately, using a tobacco pipe brush for the inside of tubing. Clean the nipple by means of a pointed piece of hard wood, after the style that watch makers clean pivot holes on watch plates.

W. Cheffins.—Have you tried an extremely small orifice, this will do away with the smoke. If one burner is not enough place two close together, one behind the other. No air need thus be used. If you obtain much more brilliancy from your method, then it may be well to consider patenting the attachment, but not otherwise.

Rev. Geo. Grove.—We believe Mr. Chadwick, of Manchester, can supply a gasometer of the style you write about.

H. Platt writes:—As a wet collodion worker I was interested in your article in March issue on "Which is the Best Process for Making Lantern Slides?" wherein I note a suggestion for obtaining a warm colour by developing with weak iron developer, strongly acid, and combined with albumen. I have tried the above, but have not got the desired "warm colour." Probably I have not used the proper proportions. If it is possible for you to do so, I should be glad if you can publish the necessary conditions to obtain the result I am in search of in the column you devote to "Notes and Queries" I am always deeply interested in your Journal. It forms one of the pleasures I look forward to in the coming of a new month. *Ans.*—Iron developer for warm images:—Sulphate of iron and ammonia, ¾ ounce; lump sugar, ¾ ounce; glacial acetic acid, ¾ ounce; sulphate of copper, 60 grains; the albumen of 1 egg well beaten; water, 1 pint. Dissolve the salts and sugar in boiling water, let it cool, then add the albumen, lastly the acetic acid. Shake well together, let stand for a week, and filter. This improves by keeping, and will require occasional filtering.

Irishman.—A mirror must be placed between the condensers, which must be set at right angles. You will find particulars in late numbers of this Journal.

Progress.—Write or call at Mr. J. H. Steward's, 406, Strand, they make Army Signal Code Lanterns fitted with limelight, and this may answer your purpose, with perhaps a little adaptation.

Rev. Perkins, D.M., B.D., and *W. H. Mathieson.*—Sorry there is no room in this issue, but articles will appear in next.

C. W.—The large condenser will not give more light, but will illuminate a larger surface of the slide placed in front. The larger diameter lens under the circumstances will be a distinct advantage. (2) Remove the stuffing from the barrel and dry well; there is doubtless water and foreign matter there, which makes up the weight you speak of.

R. N.—Clean the glass well; put albumen into a small funnel with a plug of cotton wool in bottom, then wet the plate and pass the small end of funnel along an edge of the plate, which should be held in a standing position, and the albumen will flow evenly over.

G. writes: I am about to make a lantern, and wish to do it as cheaply as possible. I learn that condensers increase in price more in proportion than they do in size. Cannot I make one of small diameter answer the purpose. *Reply*: It all depends upon the size of the slides you intend using. If you are making a so-called toy lantern, slides can be obtained which only require a 1-inch condenser. A rough rule is to have a condenser of such size that when a square slide is laid upon it, the four corners will come within the circle of the glass of condenser.

Messrs. SOPER & STEDMAN, 147, Strand, *write*:

23rd January, 1896.

Dear Sir,—We feel it our duty to write and tell you that we are more than pleased with the result of our **ADVERTISEMENT** which has been inserted in your "**OPTICAL MAGIC LANTERN JOURNAL**" for the past **TWELVE MONTHS**. We are sure you will be gratified when we tell you we have had **ORDERS** and enquiries for slides from **INDIA, SOUTH AUSTRALIA, MAURITIUS, ZAANDAM, GERMANY,** and from **ALL PARTS** of **ENGLAND, SCOTLAND** and **IRELAND**. We can only attribute these orders coming in through our advertisement in your **LANTERN JOURNAL,** which plainly shows to us that the journal in question must have a **VERY LARGE CIRCULATION ABROAD.**

Send Your Business Card TO ENSURE CORRECT ENTRY IN THE **WORLD'S LISTS**
— OF —
Manufacturers of PHOTOGRAPHIC APPARATUS, MATERIALS, SUPPLIES, etc.
Manufacturers of ART MATERIALS, SUPPLIES, etc.
Manufacturers of SCIENTIFIC INSTRUMENTS, APPARATUS, etc.
Wholesale Agents, Dealers, Importers, Exporters, of PHOTOGRAPHIC GOODS.
Retail PHOTOGRAPHIC DEALERS, OPTICIANS, CHEMISTS, with SUPPLIES.
PROFESSIONAL PHOTOGRAPHERS.
ENGRAVERS and ILLUSTRATORS—all Processes—Wood-Cuts, Brass Dies, etc.
PHOTOGRAPHIC, ART, and SCIENTIFIC, ANNUAL and PERIODICAL PUBLICATIONS (sample copy).
Publications with occasional PHOTOGRAPHIC ARTICLES (sample copy).
Hotels with PHOTOGRAPHIC "DARK-ROOMS" for the use of GUESTS.

ALL COUNTRIES REPRESENTED.

WALTER SPRANGE, Editor,
Beach Bluff, Mass, U.S. AMERICA.

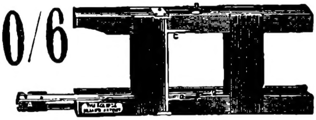
The Photographic Blue Book.

To appear in the Spring. Price, $1,00, Cloth, prepaid. *Post paid to any address on publication.*

Maker of High Class Optical Lanterns.

R. R. BEARD,

10/6



BEARD'S ECLIPSE CARRIER is a luxury to the Operator after using others. It saves finger-marks upon the slides, and produces dissolving effect with the single Lantern.

10, Trafalgar Road, Old Kent Road, S.E.

(Five Doors South of Lord Nelson.)

HISTORICAL AND BIBLICAL LANTERN SLIDES.
Send for Catalogue of New Sets this Season.

Illustrating:—British History, 360 slides; Life of Robert Burns, 100; Scottish Covenanters, 100; Sir Walter Scott, 72; Temperance Hymns, 50.

SCRIPTURE SUBJECTS.—Old Testament (720 slides, all different); New Testament (720 slides, all different); separate smaller sets of Abraham, Joseph, David, Peter, Paul, Miracles, Parables, Lost Sheep, Brazen Serpent, Good Samaritan, etc., etc.

"Very complete. Of value to schools, Bible classes, etc."—*Photographic Times.*

"Much the most comprehensive of any series of pictures yet prepared."—*Help.*

'Nothing could excel or equal them."—*The Christian Union.*

DESIGNS PREPARED. SLIDES MADE TO ORDER.

STEVEN BROS., 33, Osborne Street, CITY, GLASGOW

LANTERN SLIDES. **50 entirely New Sets,** Including Roman Wall, Church, Architecture, and Architectural details (Pre-Conquest to Tudor); Street and Slum Life, Herring Fishing, etc.

J. P. GIBSON, Photographer, HEXHAM.

Gold Medal for Amateur Photographers.

DARLINGTON'S HANDBOOKS

"Sir Henry Ponsonby is commanded by the Queen to thank Mr. Darlington for a copy of his handbook."

"Nothing better could be wished for."—*British Weekly.*

1s. each.

"Far superior to ordinary guides."—*London Daily Chronicle.*

Illustrated. Maps by JOHN BARTHOLOMEW, F.R.G.S.

The Vale of Llangollen. Aberystwith, Towyn and Barmouth. The North Wales Coast. Bournemouth & the New Forest. The Isle of Wight. The Wye Valley. The Channel Islands. The Severn Valley

Llangollen: DARLINGTON & Co. *London*: W. J. ADAMS & SONS.

OPTICAL LANTERN LECTURES,
By RALPH DARLINGTON, F.R.G.S.

My Travels in Egypt and Experiences on the Nile—150 Slides.
My Travels in Greece, Turkey and Asia Minor—100 Slides.
Across North Africa—90 Slides.
Pompeii, Past and Present, and the Bay of Naples—80 Slides.
The Sights of Rome—50 Slides.
Picturesque Italy: Past and Present—100 Slides.
Prospectuses and Terms for Lectures on Application.

R. DARLINGTON, Greenheys, Llangollen, North Wales.

The Junior Photographer

A POPULAR ILLUSTRATED MONTHLY
FOR
Amateur Photographers.

Price - - THREEPENCE.

PERCY LUND & Co., Limited,
The County Press, BRADFORD,
And MEMORIAL HALL, E.C.

LANTERN PROJECTION LENSES,

As used by the LANTERN SOCIETY.

PRICES WITH RACK AND PINION	£	s.	d.
9 inch equivalent focus aperture nearly f/8	4	10	0
6 inch " aperture fully f/4	6	10	0
6 inch and 9 inch lenses both fitting one rack jacket ..	9	10	0

5 % Discount for Cash with Order.

List of Photographic Lenses free.

ILLUSTRATED CATALOGUE OF TELESCOPES AND MICROSCOPES FOR STAMP.

W. WRAY,
OPTICIAN,
NORTH HILL, HIGHGATE, LONDON, N.

IF YOU WISH TO KNOW

1.—What focus of lens is required to produce a certain size of disc, at a given distance ;

2.—What size of disc can be produced by a lens of given focus at a stated distance ;

3.—What distance a lantern must be from the screen to produce a certain sized disc with a lens of given focus ;

SEND 2½d. FOR A

Ready Reference Table

(On Cardboard) By **J. HAY TAYLOR.**

FASTEN IT ON THE LID OF LANTERN BOX.

MAGIC LANTERN JOURNAL COMPANY, Ltd., 9, Carthusian Street, London, E.C.

OPTICAL LANTERNS & SLIDES

OF THE HIGHEST QUALITY ONLY.

NEWTON & CO.'S NEW PATENT "DEMONSTRATOR'S" LANTERN.

FOR OIL OR LIMELIGHT.

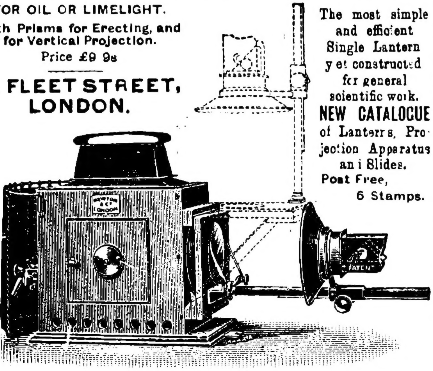
With Prisms for Erecting, and for Vertical Projection.

Price £9 9s

3, FLEET STREET, LONDON.

The most simple and efficient Single Lantern yet constructed for general scientific work.

NEW CATALOGUE of Lanterns, Projection Apparatus and Slides. Post Free, 6 Stamps.



New Detailed Illustrated Catalogue of Lanterns and Slides, 6 stamps.

NEWTON & Co. manufacture Patent Newtonian 4-wick Oil Lamps. Major Holden's Arc Lamp. Newton's Patent Hand Feed Lamp. Newton's Patent "Demonstrator's" Lantern. Patent Adjusting Tray for Jets. Askew's Patent Combination Lantern Box and Stand. Wright's Lantern Microscope. Wright's Oxy-Hydrogen Jets with "Pringle-Cut off." The "Miniature" Lantern. The Scientist's Bi-Unial. Traill Taylor's Triple Condenser.

STEREOSCOPIC PICTURES

Shown with the Lantern by the

"NEWTONIAN" SYSTEM.

(Patent applied for).

THE NEW PHOTOGRAPHY.

RAY "FOCUS" TUBE, 35s.

There has been great difficulty in obtaining suitable Vacuum Tubes for producing the Röntgen X Rays for photographic purposes, chiefly because the best conditions were not known. A long series of careful experiments has been made, to ascertain the conditions of success, at King's College, London, which has resulted in a tube of different shape, size, and degree of vacuum to those previously employed.

One important result of this is that far less current can be employed, and that a simple battery and coil may be used without Tesla apparatus.

Complete Set of Apparatus for Photographing with the X Rays, comprising Battery, Coil, Tube, &c., £18 18s.

Complete Set, as above, but with larger Coil and more Battery Power, £33.

The following Slides have now been added to those already published :

(7) Foot, naked, showing bones spread as in walking.
(8) Foot, in sock, showing bones cramped together by the sock.
(9) Hand of a Lady, by Mr. S. Rowland.
(10) Hand of a Lady, showing all the bones, including the thumb and wrist. This is the finest Hand yet produced.
(11) Fish, Sole, showing bones, &c.
(12) Fish, Plaice, showing bones &c.
(13) Cigars in Aluminium Case, and various subjects showing different degrees of transparency.
(14) Human Wrist and Arm Bones.
(15) Human Hand, showing deformity of finger.
(16) Human Hand, showing damaged finger. &c., &c., &c.

Price 1s. 6d. each. **List on Application.**

NEWTON & CO.,

3, FLEET STREET, LONDON, E.C.

Printed and Published by the Proprietors, The Magic Lantern Journal Company, Ltd., 9, Carthusian Street, London, E.C.

Digitized by the Magic Lantern Society

The Magic Lantern Society

http://www.magiclantern.org.uk/

Post-production coordinated by

MEDIA HISTORY DIGITAL LIBRARY

www.mediahistoryproject.org

Sponsored by the ACLS Digital Extension Grant, “Globalizing and Enhancing the Media History Digital Library” (2020-2021)